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36 ON THE LEADING EDGE

The next big thing in transport aircraft are lifting body designs that make the fuselage part of the airfoil. A Canadian engineer pioneered that concept in the early 1940s but the CBY-3 Loadmaster was ahead of its time.

BY ED DAS

40 TROUT LAKE AIR BASE

For more than 80 years, scenic Trout Lake in North Bay, Ontario has welcomed the thrum of aircraft taking advantage of its calm water and locations as the gateway to Northern Ontario. Generous volunteers keep the base going.

BY ROBERT S. GRANT

47 PHOTO CONTEST WINNERS

Everyone flies with a camera these days and great aviation photos are everywhere. Canadian Aviator readers have a great eye for the art and it shows in the results of our photo contest.



5 WALKAROUND

Nav Canada Crossroads

6 WAYPOINTS

Planes, Products, News

9 AIRMAIL

Joe Hasn't Changed

10 GEAR AND GADGETS

Four New Products

11 FLYING STORIES

Small World

12 RIGHT SEAT

Where To Sit

14 HEALTHY PILOT

Cataracts and Pilots

16 ON THE STEP

Get In Flying Shape

18 SAM'S JOURNEY

Cessna Skywagon

20 COLE'S NOTES

Human GPS

22 EXPERT PILOT

Physics Question

24 PEP TALK

Runway Incursions

26 VECTORS

Starting Point

28 UNUSUAL ATTITUDES

Precision Flying

30 ON THE ROCK

40 Years of Flying

32 DOWNEAST

The Argus Story

34 TALES FROM THE LAKEVIEW

Fairchild FC-2

ON THE COVER

On the Cover
Photo contest
winner was taken
at AirVenture 2018.
Photo by Curtis
Penner





Blackhawk Aerospace Dealer



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1960 CESSNA 210



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All Nav Canada Needs Is Money

LET'S NOT SACRIFICE INNOVATION FOR POLITICAL EXPEDIENCE

Well, what to do about Nav Canada? As with so many things that are integral to our lives about which most people seldom think, the pandemic has revealed glaring shortcomings that rattle the very base of its premise.

Until March of 2020, the not-for-profit corporation had stumbled on a few things, among them staff shortages that resulted in restricted access to large airports by GA aircraft. But it must be remembered that one of the main reasons getting into some larger airports was so hard is that they were just so packed with Nav Canada's main customers, the airlines, that when the frequencies got jammed, it was the least profitable part

of the business (GA) that was sacrificed.

By April, Cessnas were doing touch-and-goes at Pearson, sightseeing over downtown Vancouver day or night was a thing and the previously fat and happy Nav Canada was scrambling for cash.

In fairness, no one saw this coming. Nav Canada maintained reserves to smooth out the normal cyclical fortunes of aviation but a 90-percent drop in traffic and revenue wasn't on anyone's radar. Now that shortfall is being necessarily put on the back of airlines in the form of gigantic rate increases and they can't afford that kind of expense any more than Nav Canada can.

So, it gets back to the question of what to do.

Although it's technically a separate entity, the federal government still has a big, and potentially heavy hand, in its day-to-day affairs through its significant presence on the board of directors and its overall veto power through Transport Canada, and the temptation to meddle by politicians is evident in the debate over ATC services at some mid-sized airports.

The trick is to tease the best parts of the Nav Canada model (innovation, fiscal responsibility, forward thinking) while bailing it out of its current financial mess.

Like restaurants, small business and individuals across the country, Nav Canada doesn't need a new business model, a restructuring or a change in philosophy. It needs cash. 🐦

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WAY.POINTS

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Livery Throwback

TCA INSIGNIA GOES ON NEW A220



> Air Canada is entering a new era with an homage to the past.

The company's newest aircraft, a state-of-the-art Airbus A220-300, rolled out of the paint shop at Mirabel and into service

with a heritage paint job to celebrate the airline's roots as Trans-Canada Airlines. "The special livery pays tribute to the airline's heritage, which can be traced back to its founding in 1937," the airline said in a news release.

The livery continues a tradition started in August of 1997 when Air Canada launched A319 service in North America in a plane painted similarly. That aircraft was retired earlier this year.

Air Canada says the A220 is an integral part of its fleet modernization and its low environmental impact is a big part of that. The aircraft, which was developed by Bombardier, is one of the most fuel-efficient airliners ever built.

Even the paint is an environmental improvement. A new surface preparation material called Socogel makes the paint stick better and uses fewer toxic chemicals than other treatments. It also cuts the amount of water needed in the paint process by 10,000 litres per aircraft. ■

Nav Canada Struggles Continue

SERVICE CUTS, FEE INCREASES ANNOY STAKEHOLDERS



> Nav Canada is under attack from its employees, customers and government representatives as it struggles financially during the pandemic downturn.

The company has seen revenues plummet since air traffic dropped off, particularly early in the pandemic. It has laid off hundreds of staff, closed some facilities and tightened its belt in many areas and

Nav Canada has seen drastic cuts in revenue.

is now looking at closing as many as seven air traffic control towers. VFR access to some Terminal airspace is now being denied, with controllers citing "system capacity" constraints.

The potential tower closures have resulted in a flurry of discussion among local, provincial and federal agencies and Transport Minister Omar Alghabara has reminded all involved that Transport Canada must approve any closures.

Meanwhile, Nav Canada's only way to raise more money is to increase the charges it levies for air traffic services to customers, mainly airlines, cargo carriers and charter services.

The fee hikes averaged 30 percent and took effect last September. WestJet CEO Ed Sims said the increases are "scandalous" ■

International No More

GOVERNMENT STRIPS DESIGNATION FROM AIRPORTS

> Many of Canada's international airports have been stripped of that title and will have to apply to Transport Canada to get it back.

In early 2021, TC created an advisory circular to bring its designation of international airports in line with standards set by the International Civil Aviation Organization. In the process, a lot of good-sized airports that have scheduled international flights or serve seasonal vacation carriers didn't make the list.

In the AC, the agency says that designated international airports must have services and amenities, like Customs, Environment Canada, Agriculture Canada and minimum operational services, like airport fire departments that international travellers might need as a port of entry to the country.



On its own, Transport Canada identified 13 airports across the country that meet those needs and it designated them as international airports. Any other airports that believe they make the grade

will have to apply to be included by June 30. Those that don't make the deadline will see the international designation removed from their listings in the Canadian Flight Supplement and AIP Canada. ■

Seatbelt Flaw Cited In Death

CESSNA 120/140 BRACKETS NEED ATTENTION

> Transport Canada has notified owners and maintainers of Cessna 140 and 120 aircraft of a potentially fatal flaw in their seatbelts and urged them to fix the issue at the first opportunity.

The aircraft were originally built with an aluminum bracket holding the lap belt between the two seats. The aluminum wasn't strong enough to hold the seatbelt in a crash and Cessna changed to a steel bracket early in the production of the models.

However, some of the popular vintage aircraft still have the aluminum brackets, even though TC passed along an FAA advisory in 2014 advising the brackets be checked.

The latest action from TC came after



the death of a pilot in B.C. in a nose-over accident at a back-country strip.

The accident was survivable and another pilot in the aircraft suffered minor injuries. But the pilot's seatbelt bracket

Operators must check seatbelt brackets in Cessna 140s and 120s.

failed and became unrestrained, and he was fatally injured. ■

R&D Tax Incentives Available

MANY AVIATION COMPANIES QUALIFY



The grants are administered by the Scientific Research & Experimental Development (SR&ED) program.

"Pilots and aviation businesses will frequently be involved in developing new technology, tools and equipment — and then testing those on the ground and in the air," Hoy said.

Companies can claim expenses for staff costs, salaries, contractor costs and materials used to develop the innovation. The government compensates private companies with direct payment while publicly traded companies get an offset on taxes owed.

"You can still find lots of businesses that aren't even aware that these tax incentives exist," said Hoy. Businesses have 18 months after the work is complete to apply for the incentives.

Hoy said there are naturally rules and standards that regulate what innovations qualify for the tax incentives, but they fall into three basic categories:

- further technical knowledge or create advancement in their industry;
- overcome scientific or technological uncertainties; and
- do something, by design, that other people would find hard or not obvious.

Hoy said more information can be obtained at ca.catax.com ■

> Canadian aviation companies may be missing significant tax breaks when they develop new technologies or just improve on existing equipment and software according to a tax consultant.

Richard Hoy, president of Catax Canada, says aviation is a hotbed of innovation and the Canadian government rewards that work with research and development incentives that can be worth as much as 41.5 percent of the cost of creating the new gear, process or program.

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TAILBEACONX AND NAV CANADA

Thank you for the coverage of uAvionix and the tailBeaconX TSO certification progress. Your article in the Mar-Apr issue included the subtitle "ADS-B Out devices compatible with Canada's future requirements." I would like to stress that since Nav Canada has not finalized their future mandate requirements, we at uAvionix cannot universally claim in good conscience that we definitely meet future, un-finalized requirements. Only

Nav Canada can do that. What we can say, however, is that we continue to work with Nav Canada in demonstrating and evaluating the performance of tailBeaconX in comparison to traditional diversity transponders as received by the Aireon system for their consideration in their future mandate plans.

*Christian Ramsey
President, uAvionix*

AGELESS JOE

In 1960 I was a teacher in the Federal Day School in Hay River, NWT. That year I was teaching Physics and had a student named Joe McBryan. He was a kid with what I would call "attitude".

He wore black jeans, engineer boots, flannel shirt with the tail out, sideburns and a ducktail hair cut.

I knew he ran the projector down at the community theatre. One day I asked him what his plans were for after graduation. "Well," he said, "I'll either be a projectionist or a pilot."

More than 40 years later, I saw Joe on *Ice Pilots NWT*, the television show about his business, looking much the same as he did back in high school.

So I sent him an email with this story saying: "Looks like you made a good choice!" He didn't respond. I wasn't surprised!

Don R Olds

SEND US YOUR LETTERS

Canadian Aviator welcomes reader letters on topics of concern to Canadian pilots and the aviation industry. Please be brief, to the point and polite in your submissions.

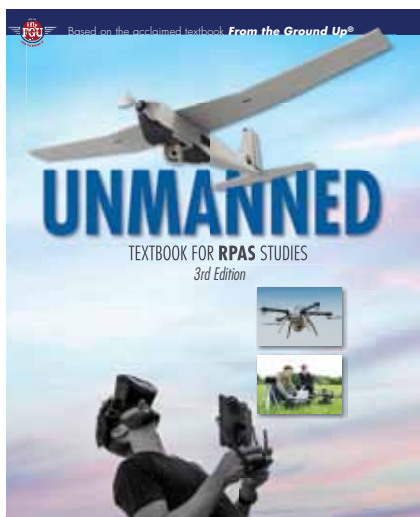


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GEAR & GADGETS



Latest Unmanned

Perhaps more than any other field in aviation, the world of unmanned aerial systems is changing rapidly and Aviation Publishers has come out with a new edition of *Unmanned*, its textbook on drones, their applications and the rules that govern their use. Produced by the same publishing house as *From the Ground Up*, the textbook is the authoritative source on this burgeoning sector. The new edition has grown by 16 pages and includes sections on the physics of multi-rotor aircraft and a study guide for Transport Canada written tests.

More at aviationpublishers.com



Wing Mat

Ever scratched the paint or dinged the surface of your airplane's wing with a fuel nozzle? Or left drips of avgas on the recently polished surface? Then what you need is a wing mat. Made of polyurethane by Fjord Aviation Products, it can be cleaned with soapy water. Available in black, blue, red or orange, it measures 18 x 24 inches. The fuel opening diameter is five inches. Available from aircraftspruce.ca for around \$100.

More at fjordav.com



GoCheck Multi-Tool

At only six inches long, the GoCheck 6-in-1 Multi-Tool should find a place in any light aircraft pilot's flight bag. The compact device is a fuel tester (with strainer), a stall horn tester, a dipstick wiper, a red/white flashlight, a Phillips/flathead screwdriver and a card to be used as a checklist reminder. Batteries (4 x AAAA) included. Around \$70. Available at aircraftspruce.ca



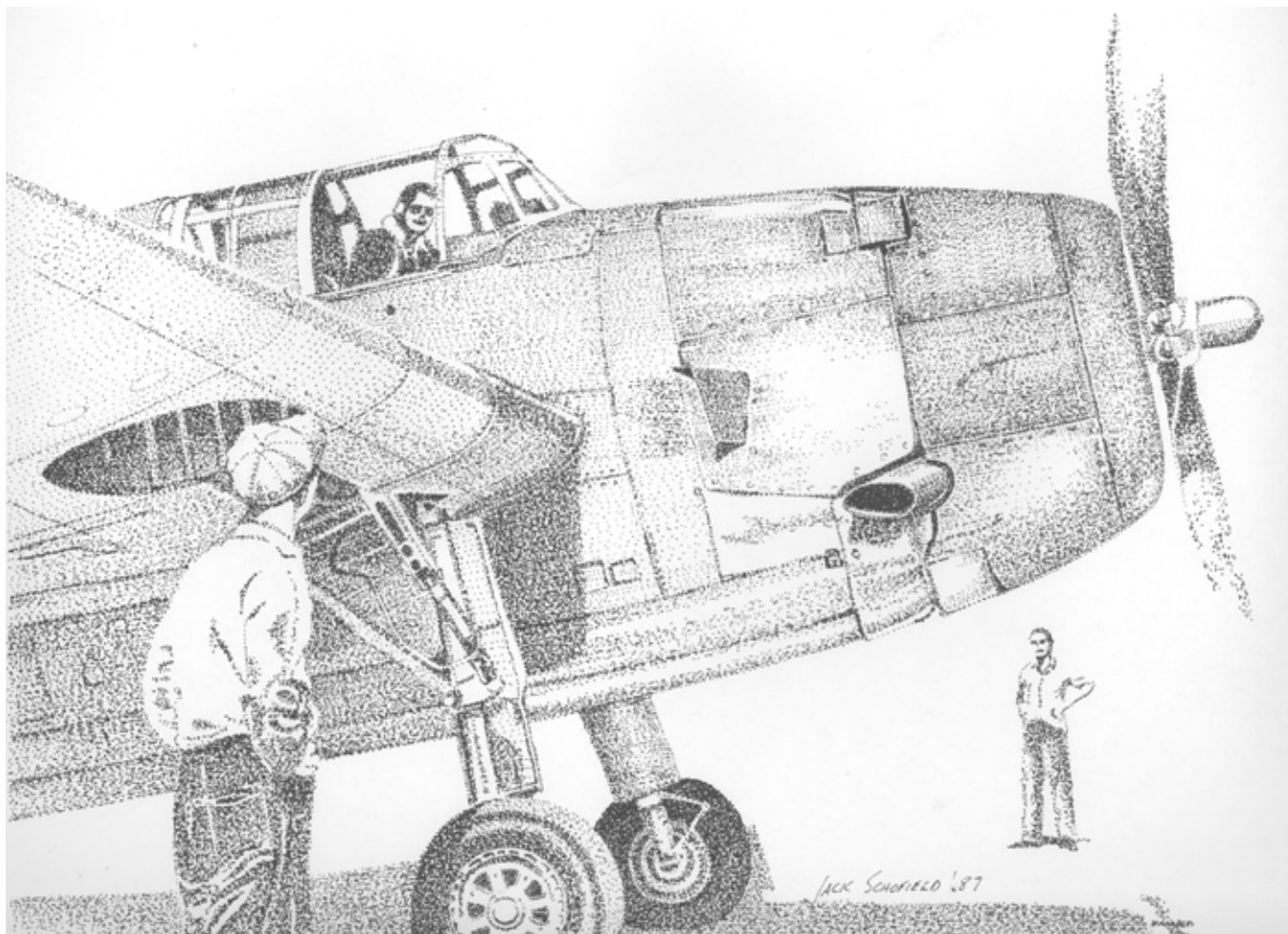
OPT-1 Oil Monitor

Electronics International is marketing a combination oil temperature and pressure instrument that makes monitoring your engine's lifeblood a lot easier. The STC'd and TSO'd primary replacement device uses red, yellow and green LEDs arranged in an analog-like display, as well as a large LCD digital readout, to convey vital data at a glance. Included in the box: OPT-1 instrument, 8-ft thermocouple cable, temperature probe, pressure transducer and wire harness. From \$520 USD. More at iflyei.com



Aviation is a Small, Small World

WHAT OHIO STATE UNIVERSITY AND I SHARE



FHT is a high time Beaver that I used to fly a lot. It keeps showing up in a different paint job, reminding me of past adventures, as does DEB, a Britain-Norman Islander that I once ferried from the U.S. east coast to Campbell River on Vancouver Island. Some of my old flying buddies keep doing the same thing—showing up on Facebook and ‘liking’ the airplanes. We call it “The small world of aviation,” so try the following for a small, but really small, world:

Milton Caniff taught me how to draw. He also taught me a few things about writing, and Caniff also loved airplanes and drew them well. So, I ended up flying airplanes, drawing airplanes and writing stories about airplanes. Who is Milton Caniff? He was a syndicated car-

toonist who appeared in every Saturday edition of the Vancouver Daily Province newspaper back in my youth (in the days of sail) and very famous as an illustrator of singular merit. His cartoons were not what we think of as cartoons—they were, instead, beautifully composed scenes with his real-life characters telling exciting, believable stories of his wartime heroes flying Curtis Kittyhawks in China with General Chenault’s Flying Tigers.

So, where’s this going? Well, I currently need a portrait of Donald W. Douglas, the designer of the DC-3, for an upcoming book. I did some checking and found that the National Aviation Hall of Fame (NAHF) in the United States has portraits of all their inductees, so I asked the NAHF if they had a portrait of Donald Douglas. They did, but all the inductee portraits are held in a

This author learned to draw and write from Caniff’s influence.

repository at the Ohio State University. The folks at the University were happy to send a copy if the NAHF okayed the copyrights.

So why all this run-around? Why were the portraits being held by the Ohio State University and what’s this got to do with flying, writing and drawing? Well, the life’s work of the artist who sketched all the NAHF portraits was, since his death, bequeathed to the University. Who was that artist? You guessed it—Milton Caniff.

I do not have the copy of the sketch yet and I wouldn’t show it to you anyway because it will be appearing in a book-in-progress, but the old saw about, ‘The small world of aviation,’ is once more proven to be true—this time in spades! ✎



Choosing a Cockpit Seat

THE TRADITIONAL ARRANGEMENT SHOULD SOMETIMES BE RECONSIDERED



Where should you sit? I am not talking about where to sit at the dining table, a dilemma we cannot wait to have at our next big family reunion. No. I am talking about aircraft, of course.

Some aircraft have only one pilot station. It is easy to identify. It is the one seat surrounded with flight controls, switches and gauges. In that case, pilots obviously sit in that location to operate the aircraft. Other aircraft have multiple pilot stations, sometimes to offer more operational flexibility, sometimes because the aircraft complexity requires more than one pilot. Where should pilots sit in that case?

The short answer is, wherever they want to. Regulations do not mandate where a pilot should sit as long as everything required to control the aircraft is readily accessible from the chosen sitting position. However, seat selection is a little more complicated than that.

When more than one pilot station is available, the stations are rarely identical. There is usually one station with the better view and easier access to amenities — the pilot-in-command seat. When the captain happens to be a flight instructor, the student occupies the pilot-in-command seat.

Traditionally, the best seat is on the left side of side-by-side airplanes, the right side of helicopters and in the front for tandem configurations. The best seat is where we learn to fly, where we establish our primary set of references and where we develop muscle memory. Needless to say, it does feel comfortable by the time we get our first pilot licence.

Habits are not the only source of comfort. Every gauge, lever and control were designed and positioned to maximize readability and ease of use from the captain's position. Operating the aircraft from the pilot-in-command seat is in fact physically easier. So why in the world

would we ever consider operating an aircraft from any other position, unless paid to do it?

For one, gaining the skills to operate an aircraft safely from the non-primary seat may come in handy when flying with another pilot; no need to land and swap seats to share the load. You might want to offer a non-pilot the view from the power seat. Or you might simply want to experience flight in your own aircraft from the passenger viewpoint. Whatever the reason, flying from the 'other seat' begins with aircraft-specific training.

For someone already familiar with the aircraft, it should take less than five hours to become comfortable with the new paradigm. The training has three phases: adjusting as necessary to the new visual references and the relative position of controls during normal flight; practicing execution of manoeuvres such as landings and go-arounds from the unfamiliar

location; and learning cross-panel flight by reference to instruments.

On the ground, some airplane pilots chronically navigate slightly left of the line, not because they are leaning left politically and want the world to know, but because they look at their aim-point through the spinner instead of looking straight ahead. Switching to the right seat presents an opportunity to recognize and fix this issue — and make ground operations safer from either seat in the process.

The most dramatic change in visual references occurs during turns. A special emphasis on this basic manoeuvre during the transition will hasten the adjustment.

Switching seat does not just look funny, it feels funny. Controlling the aircraft and reaching for the levers and switches with the 'wrong hands' can be challenging. Right-handed pilots dependent on their left hand for throttle, gear, flap and

avionics controls may find themselves slow and fumbling at first. However, it is when things start happening fast that a weakness can turn into a handicap.

In a go-around, for example, locating everything you need in the fleeting seconds after making the decision can be hectic. In some aircraft, the flap switch is located directly beneath, or uncomfortably close to, the right-hand yoke, making for an awkward transition to climb configuration. The level of performance during such manoeuvres signals the level of readiness.

Pilots who rely heavily on visual references to fly under visual conditions tend to fare better when switching seats than 'closet instrument pilots' do. Nothing is more challenging than learning to fly on instruments from the 'other seat'. In fact, no experienced seat-polyvalent pilot will choose to fly IMC from the non-primary seat when flying alone.

When viewed at an angle, critical flight instruments like the airspeed indicator, the turn coordinator or the heading indicator read differently — and slightly inaccurately. Then there is the case of gauges disappearing behind controls. Using glass panels does not alleviate all problems. Glass panels come with viewing angle restrictions before taking into account the potential for unwelcome glare.

Leaning over to get a better view might sound like a plan but it is not. The result is more likely to be vertigo than accuracy.

One interesting aspect of right-seat training is that it forces us to break habits that we may not even know we have developed. It is a great way to make things more interesting during a flight review. Like any other piloting skill, flying from the 'other seat' will become second nature with regular and systematic practice. ✈



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Deteriorating Vision

SEEING EYE TO EYE WITH YOUR CAME



The 66-year-old General Aviation pilot visited his Civil Aviation Medical Examiner (CAME) for his routine pilot medical exam. After taking the history, the physician began the examination with the visual acuity (distance vision) measurement. The pilot admitted some difficulty reading the eye chart and noted that his vision wasn't as good as it used to be. In fact, the pilot could only see the 20/40 (the metric 6/12) line on the chart in each eye and he needed to be able to read the 20/30 (6/9) line

on the chart to pass the medical. (For automobile drivers the cut off is 20/50 [6/15].)

The doctor next had a look into the pilot's eye with an ophthalmoscope, which revealed the presence of cataracts in each eye. The pilot was then told he would need cataract surgery to treat his low vision and pass his aviation medical exam. The pilot also reported that he was having trouble driving at night because of his vision and was sometimes seeing halos with his night vision (also consistent with cataracts). The pilot was

asked to make a reappointment after his vision stabilized following surgery.

Cataracts are a clouding of the formerly clear lens in the eye just behind the iris. The lens, like in a camera, focuses images on the retina to allow clear images. Cataract surgery is an outpatient procedure, and most surgeries are done with a local anaesthetic (often with a bit of general sedation). Sometimes the surgery needs to be performed because the eye surgeon is unable to see back to the retina to reveal retinal changes like macular degeneration. Everyone will develop cataracts at

some point in their lives if they live long enough. Children can develop cataracts through congenital defects, disease or injury. Most cataract surgery involves the implantation of an artificial intraocular lens. This lens is plastic, well accepted and stays in the eye forever. Before adoption of this technology, thick glasses were required after surgery.

Depending on which intraocular lens is implanted, glasses may not be required for all tasks. Improved visual results are almost universal and complications are rare. It is one of the most common surgical procedures worldwide, with around 26 million surgeries performed in the world in 2017. Eye patches are seldom used anymore but a shield may be re-

**"CATARACTS ARE
A CLOUDING OF THE
FORMERLY CLEAR
LENS IN THE EYE
JUST BEHIND
THE IRIS."**

quired to cover the operated eye at night. Drops are prescribed to guard against infection and to allow the eye to heal. Most times, if cataracts are present in both eyes (as in this case), each eye is done on different surgical dates.

In this case the pilot had two cataract surgical dates and now has an intraocular lens implanted in each eye. He was required to use eye drops daily for one month following surgery and he did need to have new glasses prescribed for distance vision six weeks following surgery. Eight weeks following his second cataract surgery the pilot was back to see his CAME to have a repeat Aviation Medical. This time his distance vision was measured at 20/20 (6/6) with glasses and he was given the 'all clear' to resume flying, as he had no other medical issues. ✈️



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Seasonal Readiness

DO AS THE BLUE JAYS DO



It's spring training time in Dunedin, Florida. This sunny coastal town is nestled into Florida's Gulf Coast and boasts many wonderful parks and beaches. There is also an impressive assortment of wildlife and birds that call this place home. While others may look for the great horned owls or eagles that inhabit this region, I can only think of the Blue Jays. Not the birds, but Canada's only baseball team. Every year they make their way down to the west coast of Florida to begin their quest to have a winning season.

At first, training is light with stretching, weightlifting and cardio work. Players have probably spent most of the off-season training to make themselves ready and better for the season ahead, but ball clubs tend to like to gradually break their players in before pushing them too hard. The player who currently stands out to me is Vladimir Guerrero Jr. He is the son of a ballplayer and has been around the game all his life. He has natural gifts that make him potent on offense and he wanted to become a better defensive presence. The main thing holding him back was his personal condition-

It's not just your fine motor skills that deteriorate over a winter without flying and most of us have been even more sedentary in recent months. Get the most out of spring flying with a fitness routine.

ing. Vlad, while young and strong, was consistently overweight. This offseason, he dedicated himself to a better eating plan, conditioning and worked on his movement-based skills. He looks great, is smashing the ball and is running all over the field.

Now please take in all that I have written about baseball and Vladimir Guerrero Jr. and apply it to the upcoming float flying season. It has been a long winter

that had all of us in the grips of a global pandemic. Many of us had to endure complete stay-at-home lockdowns that lasted weeks and months. Forget the fact that many gyms were shut down, as were hockey rinks, parks and even fitness/hiking trails. There is a large percentage of our population that has not been able to keep up with any physical fitness routine. It just hasn't been safe to do so. However, as the snow melts and the temperatures rise, sea-plane pilots are looking at the receding ice and turning their thoughts to their airplanes.

The question I pose is this: Are you ready for the physical demands of a float flying season and, if not, what can you do about it?

Just like spring training in baseball, we can start with the basics. Walking and stretching can be done anywhere. Walking will help build up stamina, get you outside and, if you can find trails near open water, give you a chance to start re-learning how to read the winds and water. Stretching is key, as it seems that getting up onto the wing to fuel the airplane and dip the tanks is getting harder for me each year. While most people tend to concentrate on their lower body and legs while stretching, do not forget to work your upper body as well. There is so much twisting, turning and torsion put on your body

while getting in and out of an airplane, loading and unloading, or even getting on and off the floats at the dock. Total body stretching is time well spent.

Baseball players work on their craft year-round; the professionals more so than us amateurs. But even a hack like me tries to get my swing feeling decent and throws the ball around to work out the shoulders. Just throwing and catching the ball gets my hand-eye co-ordi-

aboard. This is my time to touch all the controls and pre-visualize takeoffs and landings while remembering all speeds and engine settings. I put my headset on and strap myself in to make it as real as it can get. I even do fake radio calls to make sure that I can confidently speak on the mic when the time comes. If your airplane has a walk-over wire on the floats, then I fully recommend going back and forth on it multiple times

until you are confident in your balance and speed. Again, it is much better to practice this while stationary rather than on a river or lake while moving towards a dock.

Finally, I just really like to be around airplanes and, like many ballplayers or athletes of any type, I want to prolong the privilege of what I do. If this means paying attention to my nutrition plan to stay as healthy as possible, then

that is what I do. If exercise, particularly motion-based and pliability work, will enable me to continue to do a wonderful thing like float flying into my later years, then I am signing up for classes, searching online for tutorials and putting in the work. I may not be a professional athlete in Florida getting ready for the upcoming season, but I am an active member of the float flying community, and loving every second of it. ✈️

"WALKING WILL HELP BUILD UP STAMINA, GET YOU OUTSIDE AND, IF YOU CAN FIND TRAILS NEAR OPEN WATER, GIVE YOU A CHANCE TO START RELEARNING HOW TO READ THE WINDS AND WATER."

nation going. The same goes for float flying training. Even if my airplane is sitting in a hangar or snowbank on the side of a taxiway, it does not mean that I can't practice with it. I like to sit in the cockpit and go over scenarios and procedures. This is a nice, quiet time for me to get my hands and feet, but, more importantly, my mind in the right place before my first flight. The engine is quiet, the radio is silent and there is nobody



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The Venerable Skywagon

CESSNA'S JACK OF ALL TRADES



In the early 1950s Cessna introduced the heavier and more powerful 180 to complement the 170. They called it the Skywagon and it was meant for those who wanted a four-seat airplane that could carry a higher load. Its aluminum alloy airframe and wings made this a durable work plane, which is why many outfitters still use them today to haul people and gear in and out of camps. The 180 also has a few neat flying stories under its belt. In 1964, Geraldine Mock was the first woman to fly around the world. The flight was completed in her 1953 Skywagon, named the 'Spirit of Columbus'.

I was excited to get my hands on a 1953 Cessna 180 after being offered the

opportunity to ferry it across half the country. The first-year production (1953) models are said to be the lightest, sometimes a preferred model to its younger siblings, which had heavier parts installed from the factory throughout the years, such as a thicker windshield, a baggage door, thicker gear legs and a bigger instrument panel. Cessna eventually switched to a 185 fuselage, which had an extra window. Cessna upped the gross weight to compensate for these changes. This made for a debatable subject but, in general, the lower the empty weight the better.

I picked up the airplane in Selkirk, Manitoba with its new owner and student-pilot Aaron. After dealing with a minor issue with the tailwheel during

The brawny Cessna 180 was introduced in 1953.

the test flight, we were ready to depart for British Columbia's Sunshine Coast. It was a brisk -20° C when we took off into the sunrise. A quick 180-degree turn and we were heading west. I decided to stop in Shoal Lake, Man. for our first fuel stop. Fuel is reasonably priced and Dennis, the airport manager, is always very welcoming and helpful every time I stop by. Next up was Swift Current, Saskatchewan, arriving after having dodges a few snowy areas with poor visibility and low ceilings. The bone-chilling gusty winds made this a very quick fuel stop as we just wanted to get back to the warmth of the cabin as soon as we could. Onwards, the weather was only getting



The Skywagon is a nice cross-country cruiser that's at home in the bush.



better as we made our way towards the Rocky Mountains. By the time we made it to Pincher Creek, Alberta, it was above zero with clear skies, a welcome change in the weather. CZPC is also one of my go-to fuel stops because Jim, the airport manager, is just the friendliest guy and the airport is conveniently located. After this I had to make a decision; how far can we make it before sunset? I figured with there being no clouds over the mountains, we could go directly to Castlegar, B.C. over the peaks instead of taking the longer VFR route through the valleys.

We took off from Pincher Creek and climbed up to altitude. We enjoyed the view of the Rockies unfolding before us as we buzzed over the peaks in light winds. The turbulence was almost nil,

making for perfect flying weather over the Rocks. As we flew over the Purcell Mountains and into the Kootenays, we marvelled at the beautiful orange pastel sky as the sun hit the horizon. Descending through the valleys reminded me of the time I used to fly Dash-8s to CYCG, my favourite flight at the time. The lilac afterglow high above complemented the silhouette of the mountains as we touched down in Castlegar.

The next morning the weather was just as good, which is rare around the Kootenay region, or any mountainous area as a matter of fact. It's almost always somewhat of a challenge flying low level VFR across the Rocks. Being well informed about en route weather and winds is key to safe crossings, but that day was another

exception to the rule; winds were light below 10,000 feet and the sky was clear. We took off from Castlegar and headed directly to the Sunshine Coast at 8,500 feet. The time passed quickly as we flew over the Okanagan and the Cascades towards the Coast Mountain range. With the coast in site, Vancouver Terminal cleared us to descend at our discretion over Howe Sound and into Sechelt.

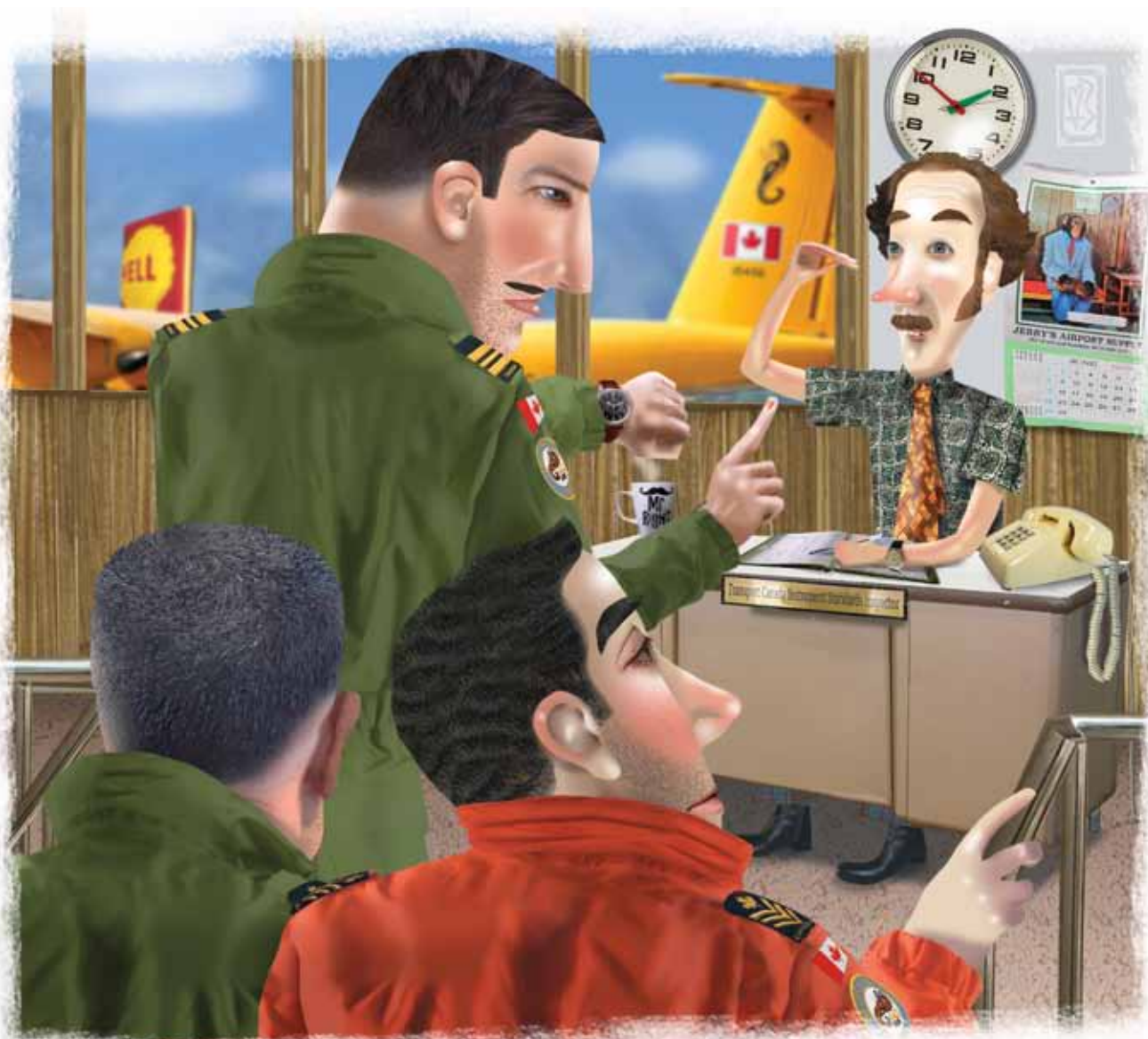
The 180/185 has always been one of my favourite Cessnas. The 185's ear-splitting sound on takeoff is one of my favourite airplane noises, with the 180 close behind, even though that noise comes from the propeller tip hitting the speed of sound (which is actually a little inefficient as it creates drag). The early model 180 was a joy to fly with its light basic empty weight. Its takeoff performance was short and quite impressive, especially since this one was equipped with the Continental O-470-R and a STOL kit.

Cessna's 180 isn't perfect. There are airplanes that will fly faster and others that will haul more — and a few that will get in and out of shorter runways. But the 180 does all these things well, which makes it a good 'jack of all trades'. I look forward to my next encounter with the mighty Skywagon. ✈️



Dusty — The Human GPS

AND HOW I EMBARRASSED MYSELF AS A TC INSPECTOR



Before we had GPS there was 'Dusty'. He was a navigator with the RCAF and had provided navigation duties on Argus submarine-hunting patrol aircraft over many parts of the world. He was instrumental in helping his Canadian crew win first place in NATO war games against other nations that had more sophisticated aircraft and navigation equipment. When the Argus aircraft were retired, he cross-trained as an air force pilot.

When he finally retired, he took university calculus courses for 'fun'.

Dusty was a human GPS. During the 1980s and 90s, he and I flew together all over British Columbia while carrying out our inspection duties as Transport Canada Inspectors. We flew Twin Otters, an amphibious Beaver and Beechcraft King Airs into every nook and cranny throughout this beautiful province.

Flying VFR, sometimes in marginal weather, in the northern mountains can

be a challenge in navigating. Not so when Dusty was on board. You could always rely on the GPS that he carried in his head. His navigation talents were amazing. We not only enjoyed crewing aircraft together, but we also became fast friends.

So how did a 'bush rat' from Northern Quebec and an Alberta boy who was an air force officer, navigator and pilot meet and eventually end up becoming friends and flying together? For me, it was the result of a rather embarrassing encounter.

ILLUSTRATION: KATH BOAKE

On June 8, 1978 I was a Transport Canada Instrument Standards Inspector carrying out IFR flight testing duties at the Vancouver International Airport. Day in and day out I would carry out flight tests on a large variety of airplanes. While some aircraft were quite sophisticated corporate jets and turboprops, the bulk of the testing was done on light twin-engine, flight school aircraft like the venerable Piper Apache and Beechcraft Travel Air.

Our offices were located at the Shell Centre on the southwest side of the airport. A constant aggravation was that our candidates would show up at the wrong site or, quite often, were late in arriving.

About two weeks prior to this day, I had a call from a candidate who had a very distinctive accent. He was calling to confirm the date and time of his flight test and the location on the airport. Fearing a language issue, I carefully briefed this gentleman on our location and the time of the flight test. I was very specific on requesting that he be punctual, explaining that we were having issues with candidates who were being tardy

with their appointments. The day before the test, the same 'distinctive voice' called to once again confirm his appointment. Once more I reiterated the location and the request to be prompt on arrival.

On the appointed day and at the appointed hour, the candidate was a no-show. About half an hour after the designated time, the 'distinctive voice' called and wanted to know where I was. After having given him directions and cautions about being on time on two previous occasions, I must admit to being annoyed. The candidate was on the north side of the airport and so I directed him to get himself and his airplane over to our offices, "Right now!" Most of our candidates were flight school students and I was starting to lose my patience with this one.

**"IN MARCHES
A FULL CANADIAN
FORCES COLONEL
...AND A FULL
SEARCH AND
RESCUE CREW OF
A DE HAVILLAND
DHC-5 BUFFALO
AIRCRAFT."**

After a lengthy delay I heard quite a commotion as a large group of people were coming up the stairs to the testing office.

Oh-oh. In marches a full Canadian Forces colonel (the 'distinctive voice') and a full search and rescue crew of a de Havilland DHC-5 Buffalo aircraft. The aircraft captain and 442 Squadron training pilot was Major Dwight (Dusty) Rhodes. He had not only the colonel, but a navigator and several SAR technicians with him. They were all decked out in operational flight suits and jump coveralls, as the aircraft was on standby for search and rescue duties. Wow, they were impressive! Rather than the usual 'kiddy car' that I

was used to, I had just directed these folks to move a large transport category aircraft across the airport and I probably had not been too polite in doing so.

It turned out that the colonel was retiring and, prior to leaving the air force, was using the Buffalo to obtain his civilian pilot licence and instrument rating. After suitable apologies over the misunderstanding, the flight

test was successfully carried out.

About a year later I was in the Airways Division carrying out the duties of an Aerodromes Inspector, flying inspection aircraft to all parts of the province. Major Rhodes, now just 'Dusty', had also retired from the military and had joined the same division as an inspector. Over the years we had many a good laugh over our first meeting.

Dusty has 'flown west' now and I really miss him. Gone are our days together, travelling through the north and landing at Tulsequah on B.C.'s Taku River, near Juneau, or at Atlin, Dease Lake and Telegraph Creek. However, not forgotten is my good friend Dusty and his amazing talents as a pilot and navigator.

Dusty, may you have 'tight floats and tailwinds'.

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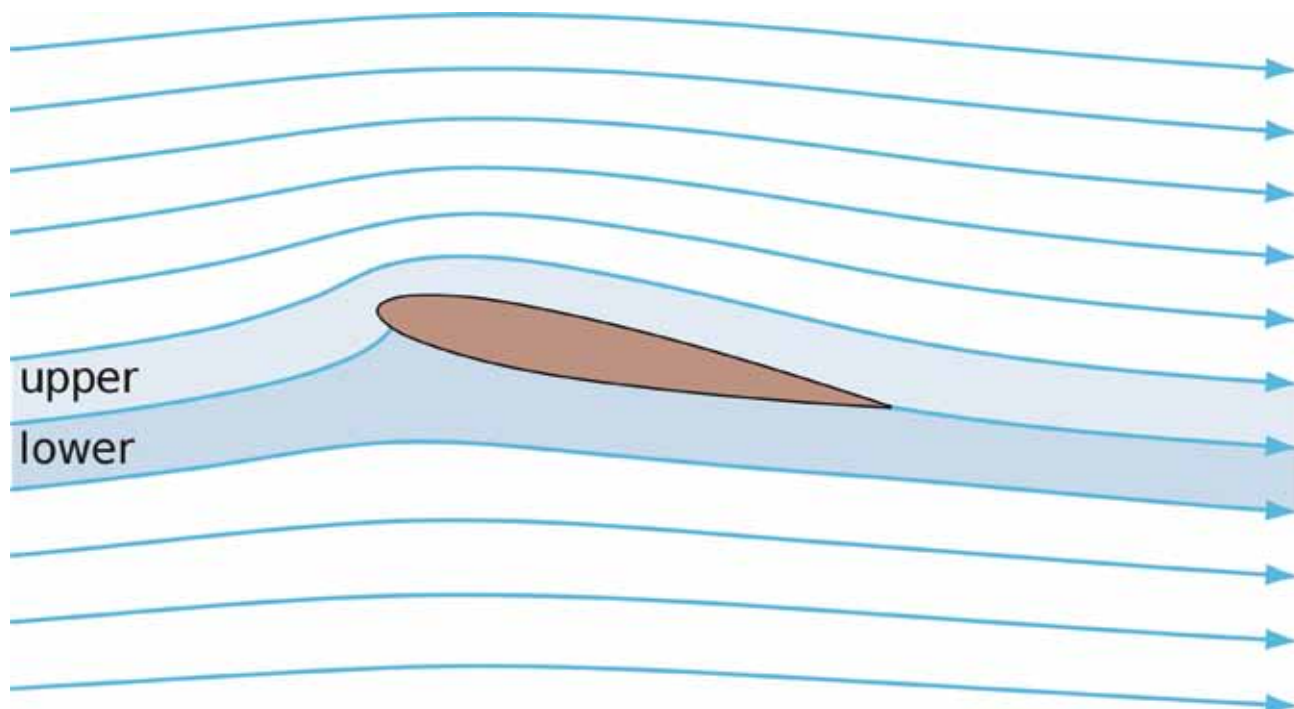
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Bernoulli vs Newton

WHO GOT THE THEORY OF FLIGHT RIGHT?



Tell us why we should hire you?" Sitting across the table from me in the Air Ontario boardroom was a manager from Human Resources. Beside her were two captains from Flight Operations. They'd already politely roughed me up with some technical questions and now sat quietly listening.

As I considered my answer, a Dash 8 taxied by on the ramp one floor below us. I set aside my scripted response and instead pointed to a company turboprop near the terminal building. "If you ask pilots what makes airplanes fly, they might say Bernoulli's Theorem. In my opinion it's money."

Then I shut up and waited for their reactions. With smiles emerging everywhere, I stood up, shook everyone's hand, offered my sincere thanks and left. It's always best in these situations to know when to stop talking and start leaving. It had worked. I got the job.

The famed mathematician Daniel Bernoulli would have forgiven me for my

somewhat irreverent answer that day, specifically the idea of what makes airplanes fly. Mine was clearly not the explanation we'd all been taught in ground school, namely the one that put Bernoulli's famous theorem at the forefront where the generation of lift was involved.

Here is how I once explained the question of how airplanes fly to the curious. "Let me tell you about the Equal Transit

**"THIS EXPLANATION MAKES
FOR A GOOD STORY. TOO BAD IT'S
MOSTLY WRONG, OR AT BEST,
INCOMPLETE."**

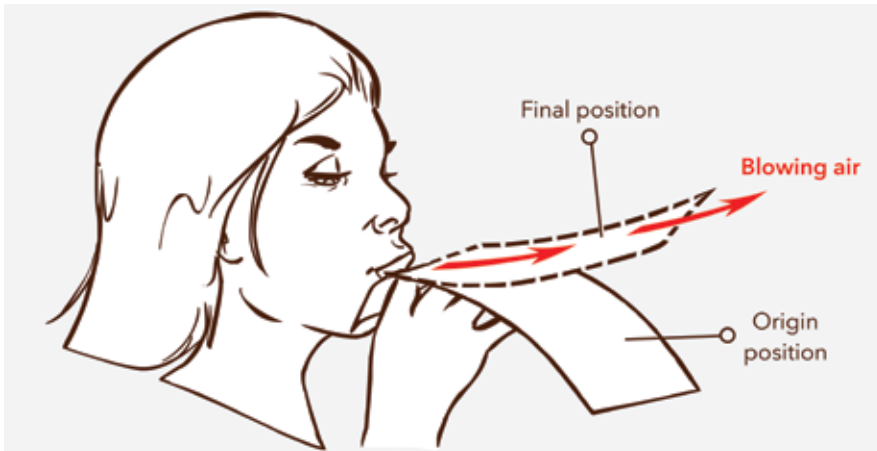
Time theory of lift. When molecules of air meet at the leading edge of a wing, some flow over the bottom of the airfoil while the rest track over the top. Since the air travelling over the top has a longer path, it needs to move faster in order to meet up with that flowing below the wing. The faster moving air is subject to Bernoulli's

The physics of flight is still a matter of debate.

Theorem, which produces lift, and presto — that's how we do it!"

This explanation makes for a good story. Too bad it's mostly wrong, or at best, incomplete. It is true that as air increases in velocity it experiences an accompanying drop in pressure. This fact has been employed successfully in carburetors and ejector-style pumps for many years. However, wings do not possess the circulator shape of a venturi. Where the Equal Transit Time theory is concerned, the adjacent air molecules which run into each other at the leading edge have no inherent reason to rendezvous at the trailing edge of a wing.

Forging on, it is absolutely beyond reproach that air increasing in velocity is subject to a pressure drop; this is a known and observable fact. What is puzzling is why this occurs in the first place. Even more befuddling is how wing camber itself can impart an increased velocity in what is otherwise



free-flowing air. In fact, the velocity difference between upper and lower airflows is so great that, by the time the air molecules take the famed low road, their buddies that flew over the upper surface are nowhere to be seen. At the trailing edge it is, as they say, 'crickets'.

Finally, there is the matter of what is ostensibly a highly localized low-pressure area, one literally forming above a wing that is itself moving through the atmosphere. How this occurs in the first place and then stays more or less intact, right up to the point of delaminating air flows that characterize a stall, is also beyond our present understanding. Wing camber isn't the secret sauce of lift because the same thing happens with symmetrical airfoils.

For a simpler but still incomplete explanation of lift, you're best to invoke Newton. After all, his famous observations are alleged to have started after observing an apple falling — the simple result of gravity (which, incidentally, glider pilots regard as a legitimate form of thrust). If we consider Sir Isaac's Third Law, the one dealing with action and reaction, the elemental forces of lift are truly less mysterious than those of Bernoulli. Given that air has mass, and further assuming the relative airflow created by forward motion causes a reaction between a wing's angle of attack and air, the downwards deflection of air results in an upwards force being imparted on the wing.

Newton's Third Law also helps explain how airplanes can fly inverted, using angle of attack alone (something pure Bernoulli doesn't provide for). What is indisputable is that both men's theories are present and observable on airfoils where the generation of lift is considered,

but neither can be said to be all-encompassing in nature. This leaves the curious among us not unlike theoretical physicists but, in our case, souls in desperate need of a unifying aerodynamic theory.

Work once done wholly with slide rule and wind tunnel is increasingly the realm of computer simulations using something known as computational fluid dynamics. Even if the 'how' part in the formation of lift is still unknown, equations used to manipulate the effect are now the everyday purview of aerodynamicists. Using simulations, we can now literally design new airfoils, even test them, with nary a wing rib manufactured nor a rivet bucked.

If you started reading this article believing you understood the theory of lift, but now aren't certain, take comfort; you're in good company. Albert Einstein is said to have once designed a wing and then coaxed a German aircraft company to build an airplane around it. Apparently the results were, to be kind, suboptimal. Einstein cut his losses and went on to wow us with his more famous theoretical efforts, those merging concepts of time, space and the speed of light together in ways even the common man can understand. What's even better, it appears he got it right.

This is something aerodynamicists haven't quite yet succeeded at; namely, coming up with a unifying yet understandable answer to the seemingly complex, but comparatively simple, question: How do airplanes fly? Until that time comes, should someone ask you, let him or her know, "With money, and lots of it!" Who knows, tell the right people and you might even get an airline job. ✈



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Runway Incursions

EXCUSE ME: THAT'S MY SPOT ON THE RUNWAY



The Transportation Safety Board produced its most recent 'watchlist' of safety concerns towards the end of 2020. The document, released every couple of years, identifies issues towards which action is needed to enhance the safety of the nation's transportation system. Of concern to aviators is the presence of runway incursions on the list. And of greater concern is the fact that this issue doesn't seem to go away. Even after many years of it being a talking point in safety seminars the world over, it continues to be an issue that is anything but on the decline.

A runway incursion, as defined by the International Civil Aviation Organization, is any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing

and taking off of aircraft. The associated hazard is obvious — collisions. While in Canada most reported incursions are not high-risk, their increasing tendency may be cause for worry. In the ten-year span from 2010 to 2019, Nav Canada recorded an 86 percent increase in incursions.

Lack of planning, inattention and miscommunication are the overriding causes that lead to incursions. Culpability lies with the obvious suspects: it is pilots, air traffic controllers or vehicle operators who are the perpetrators of these inadvertent threats.

Incursions typically have common traits. They can result from an aircraft or vehicle entering, or crossing, a runway without a clearance from air traffic control to do so, or with an incorrect clearance to do so. They can result from incorrect spacing between arriving and departing aircraft. And they can result

Ground vehicles on runways when they shouldn't be are a common cause of runway incursion incidents.

from landing, or taking off, without any air traffic control clearance whatsoever.

Contributing factors to incursions are many. Poor weather, for instance, isn't only a concern when aloft. Low visibility increases the possibility for pilots to become disoriented when taxiing. Controllers, too, may be impaired by low visibility if required to visually follow or cross-reference an aircraft's ground movement.

The design of an aerodrome can have its nefarious hand in increasing the likelihood of an incursion. A complex airport with multiple runways can be confusing for a pilot, particularly if they're unfamiliar with the surroundings. Having to cross active runways to move between takeoff and landing areas and parking positions heightens the risks of incursions.

Use of standard phraseology is a key to safe surface operations. Non-standard communications can lead to confusion between a pilot and controller. Also, hearing what you expect to hear, and not what you were actually told, is a recipe for a pilot to venture onto a runway that he or she thought they were cleared for but weren't.

Pilots can become overworked too. Configuring their aircraft for departure, or reconfiguring their aircraft immediately after landing, may overtax the pilot leading to confusion over air traffic control instructions. Situational awareness can go awry, and confusion can arise over communications. Wandering into the wrong place and creating an incursion can be the unfortunate side effect.

Minimizing the risks of runway incursions can be achieved in several ways.

Pilots should review their anticipated route to the runway before any departure. They should know the taxi route to where they'll be parking well before they arrive at their destination airport for landing.

**"ALWAYS READ BACK GROUND
AND TOWER TAXI INSTRUCTIONS
TO MAKE SURE YOU'RE ABOUT
TO DO WHAT YOU'VE BEEN
INSTRUCTED TO DO."**

Pilots must listen carefully to air traffic control instructions. The taxiing route you're given may not be the one you expected; or you may think you heard the one you anticipated hearing, rather than the

one actually authorized. Always read back ground and tower taxi instructions to make sure you're about to do what you've been instructed to do. Also, confirm permission to cross all runways prior to crossing them.

Even when given authorization, visually scan in every direction to be absolutely sure that you're not getting in someone's way.

Have diagrams of unfamiliar airports at your beck and call. Ask for controllers to give you progressive taxi instructions to be absolutely sure of your movements at airports with which you are unfamiliar. And take note of airports that have left and right parallel runways. Make sure you're taking off on the one you've been told to use. Be familiar with all taxiway and runway signs. And, lastly, if in any doubt, STOP! Then ask for directions. ✈️



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Aircraft-Tower Communications

TIPS FOR GETTING MESSAGES ACROSS EFFECTIVELY



Have you ever been sitting down, minding your own business doing whatever it was you were doing, when someone else started talking to you and asked you a question about what they said? But the problem is that you didn't even hear what was asked, let alone what was said before the question?

Your mind was otherwise occupied, even if only trivially, so while you heard that someone was talking, you only realize late in the game that they might be talking to you.

If you're a pilot, it probably has happened that ATC made a call to you, but you didn't quite catch it. There's always something going on in the cockpit — instructing a student, briefing an approach

procedure, pointing out something to a passenger — and it's easy to see how it can happen. After all, it could have been that there were several aircraft out there and, since you weren't expecting a call right now, maybe that last call on the radio wasn't for you.

It's a reality that sometimes this situation occurs and sometimes a controller can be a little, well, bothered by the fact that you didn't hear the call. The reverse can occur, too, where a controller is occupied by something off the radio when a pilot calls in. The only real difference is that, generally speaking, the radio calls not made by a controller on an ATC frequency are, for the most part, directed at the controller, so there is at least the understanding of who the call was for.

Courtesy goes a long way to promoting clarity in radio communications.

The bother to a controller typically stems from the fact that something is being considered and an answer is desired — even needed — in the short term. Often it has to do with planning traffic flow, but it can also come down to something having to be done, like moving someone for the sake of keeping aircraft separated.

For either the pilot or the controller, it comes down to the same thing: It's often best to get someone's attention before starting a long spiel or asking a question, especially if it's a long statement or question that you don't want to have to repeat. Which brings me to the next

point. Sometimes you believe someone is listening to you but after you say what you wanted to say, it becomes clear that the other party was not ready to hear all that you had to say.

For ATC, this is often seen when a pilot, typically a student pilot, has a message to deliver, like their position and intentions when calling in to ATC, but they don't get the controller's attention before they begin their mentally rehearsed transmission. As a controller, I would be continuously listening to the radio, but many transmissions I'd receive would be relatively short and I would be able to catch everything I needed to hear to react appropriately, even if I wasn't one hundred percent attentive on the radio due to other tasks. If, however, it was a long transmission with a lot of details, it's quite possible that a simple blurting of all that information might get lost if I wasn't ready for it.

A general practice that should be considered is already set out for us; a simple 'opener'. The idea of making a single, quick call starting with the station you're calling followed by your callsign, then waiting for a response before saying your question or statement you want the other station to hear.

Of course, if every conversation on an ATC radio frequency went this way, it's easy to imagine the frequency would be

inundated with 'extra' calls that can be deemed quite unnecessary. The idea behind the 'starting point' is to use it when the recipient may not be paying enough attention to catch the entire transmission.

As a general rule, if your recipient's transmitter has been silent for a while, initiating the conversation with a simple opener as mentioned above is a good idea. This applies to both pilots and controllers.

If the controller is relatively busy, their

going to be a long one, it might be best to give the recipient a 'heads-up' that something is coming. For example, a holding clearance or missed approach instructions can sometimes contain several points that are important for the pilot to get correct. In this case, I would tell my ATC students to give the pilot a chance to get ready to copy it instead of just blurting it out. Saying "Alpha Bravo Charlie, holding clearance," and then giving the pilot a chance to answer means I'm also giving time for the pilot to get in a position to listen to the details of what's coming. I would rather hear, "Standby," than "Can you say all that again?" If I'm asked to stand by, I might be able to move on to another short but necessary task while the pilot gets ready to hear my clearance.

In the same vein, a pilot with a long request would be better off initiating the conversation in a similar fashion, perhaps, "Centre, Alpha Bravo Charlie, request." If it's something simple like requesting an altitude change or a direct routing to the next fix, this may not be necessary, but if it's requesting an entirely new route to a new destination, or other such longer request, a controller would appreciate the chance to get ready to copy it.

As always, communication is important, and the subtleties behind it can take time and thought to master. Especially over a radio. ✈️

**"IF THE TRANSMISSION YOU
HAVE TO MAKE IS GOING TO BE A
LONG ONE, IT MIGHT BE BEST TO
GIVE THE RECIPIENT A 'HEADS-UP'
THAT SOMETHING IS COMING."**

attention is obviously being paid to the radio, and this starter call to the controller may be unnecessary. It may even be unwanted since it would take a little bit of time. Airtime on a radio is a precious commodity when you're busy.

Similarly, having been a busy controller, it is much appreciated that pilots flying in busy airspace seem to know instinctively to pay attention and are typically ready for a call when directed at them.

If the transmission you have to make is

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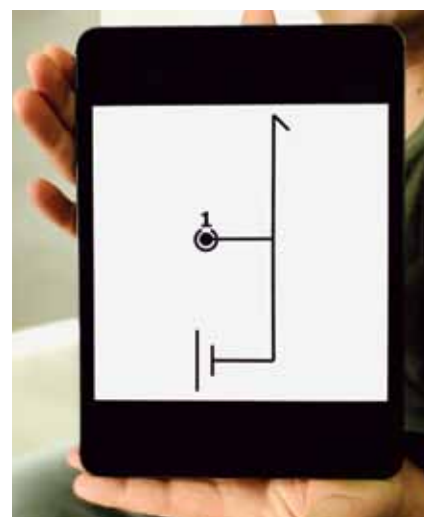
A SOLID FOUNDATION IS ESSENTIAL



There are not many things I promote more than the empowerment that nurturing and developing solid foundational flying skills will give to a pilot. Alan Cassidy, the author of *Better Aerobatics*, one of the very best textbooks on the subject of aerobatics, has this to say about airmanship: "Airmanship is all about doing the 'right thing' in every aspect of your flying. To do the 'right thing', you have to know what the 'right thing' is, and you have to care enough to do it."

Picture this: You are airplane watching at your favourite spot, coffee in hand, on a beautiful calm-wind day, watching the comings and goings of several piston singles at your local municipal airport. You notice that one pilot in particular is practising a session of circuit work. While studying every movement that the Skyhawk makes, you notice that during every climb out, the right wing hangs low, as if it were limping behind. This phenomenon is not limited to student pilots alone but

can also plague the unwary licensed pilot who had the insidiousness of this most basic principle infiltrate their flying. Essentially, we're talking about something very simple and well known here, but if the requisite discipline (a form of airmanship) is not developed in the formative hours of a student-pilot, bad habits can form. As the aircraft ascends at an increased angle of attack and a high power setting, the asymmetric thrust from the descending propeller blade (right side of the propeller disc on a North American-built engine) causes the aircraft to yaw and slightly roll to the left. Everyone knows to counteract this effect by *applying the necessary right rudder pressure* (I've used italics for emphasis as excessive rudder is nearly as common as the lack of it). A good instructor will point out the necessity of appropriate rudder apparent early in the development of a student-pilot and throughout the training course to ensure good technique. However, once that pilot is licensed and released into the



Top: In flying, attention to every detail is important. Above: Fig. 1

world knowing what the right thing to do is, they also have to care enough to do it every single time so that it becomes ingrained in their pilot DNA. Not knowing how to do this can cause you to climb out



in slip, causing needless drag contrary to your intended flight profile.

Let's compare two unrelated things and deconstruct them to view their basic parts: Circuit patterns and hammerheads. I know these are an odd pairing but stay with me on this. If you would look at an *Aresti notation* (hieroglyphic-like representations of aerobatic figures) of a basic hammerhead, you would see a series of horizontal and vertical lines which at first glance can be deceptively simple (in Fig. 1 I've included a photo of the *Aresti* symbol). Compare this simplistic image with one that most every pilot will be familiar with, a rectangular circuit pattern. Now put on your judge's hat and let's evaluate a pilot flying both a circuit pattern followed by a hammerhead.

The first thing we'll need to evaluate in either operation is grading criteria, so why don't we first observe a circuit pattern? Let's grab a Transport Canada Flight Test Guide. It doesn't matter whether it's for the RPP, PPL, CPL or even the multi-engine rating, as the standard in this regard is essentially the same for all of them.

At a minimum, each Flight Test Guide calls for the circuit pattern to be flown accurately and wind-corrected to maintain the desired ground track. In order to do this, a pilot must look at the circuit as more than just the individual legs that make it up. It is also all of the connect-

ing pieces which join those legs. Imagine you're climbing with a steeper-than-normal climb angle due to a strong headwind. For an accurate circuit to be flown, a pilot must compensate for this, which could be done as easily as just delaying the turn to the crosswind leg.

Each of the turns within the circuit demands the same level of focus as any other segment. Your pre-flight planning paired with your ability to adapt in real time to the actual wind should guide you on when to start your turn and which rate of turn is needed for your aircraft to maintain the desired ground track. Caring and investing in accurate flying throughout your pilot development will yield safer, more enjoyable flights, not to mention a higher flight test score.

Next, you'll want to grab your copy of the IAC (International Aerobatic Club) contest rulebook so we can now judge a competitor's hammerhead at an aerobatic contest. As mentioned earlier, the base *Aresti* symbol for this particular figure is deceptively simple and in keeping with our theme of maintaining a command of the basics. Just like the circuit, to reach a high level of precision, the parts of a hammerhead involve more than merely a pull or push to a vertical upline followed by a yaw-pivot at the top.

What happens between all those segments must be considered with equal at-

Every aspect of flight deserves the pilot's full attention.

tention. In order to maximize efficiency and accuracy, a pilot must pull (or push) using a pitch rate/G-load that will establish a vertical upline without scrubbing more energy than necessary. (Too much pull will create excessive drag, which will leave less airspeed to draw a long upline and less potential energy for conversion back into kinetic energy.) While the pilot of a Lycoming engine is pulling up, they also need to correct for gyroscopic precession which acts to yaw the nose to the right when pulling to vertical. When you push to vertical, you can leave the rudder pedals alone as the gyro forces and P-factor cancel each other out. As the airplane decelerates on the vertical upline, the forces of torque and slipstream become increasingly apparent. This needs to be corrected with slight right aileron and right rudder, which is then followed by swift, full left rudder going into the yaw-pivot at the top of the hammerhead.

There is a little more to flying a hammerhead than this, but I'm sure you get the idea. Something seemingly complicated is composed of all the basic concepts of aerodynamics that you learned about in your ground school studies. One of the great things about aerobatics is that it puts all these concepts right in your face. If these basics aren't well understood, it will be nearly impossible to get consistent results. Your brain is working in overdrive, trying to process everything in real time. When you're under the stress of pulling/pushing a significant amount of Gs, you have limited processing power, similar to experiencing the stresses of a busy circuit involving challenging wind and traffic conditions.

Earlier I spoke of being empowered by a strong foundation in the basics. For me, the benefits of this are best manifested through a pilot's ability to adapt. Curious to see this in action? Go to the *Flight Chops* channel on YouTube and find the series that my Extra 300L and I were both featured in. Watch the episode titled '*The exact right amount of apprehension*', where I send Dave Carrick solo in the Extra. You will see what a strong foundation in the basics can yield: Safer, more accurate flying that results in more fun! 🛩️



From a Norseman to a Sportsman

THROW IN B-767S AND A320S ALONG THE WAY

Lots of young people who grow up to become pilots get an early start. Perhaps they live near an airport and see planes flying above them every day. Maybe they lived in Canada's North and grew accustomed to the sight of bush planes coming and going. Dave Paddon, a native of Labrador, did both, living in a northern community served by bush planes and just a few kilometres from a large military airbase serving Canadian, U.S., British and other NATO countries.

But his introduction to aviation may be unique in the annals of Canadian aviation. In 1956 Dave's parents were living in North West River, Labrador but there were some concerns about his mother's pregnancy. So, Dad made the decision to send his wife to a hospital in St. Anthony on the northern tip of Newfoundland. Fortunately, the delivery went well and after a few days Mrs. Paddon and her bouncing baby boy were flown back to their Labrador home. At just a few days of age the infant Paddon found himself snuggled in a basket in the back of a Noorduyn Norseman bush plane on skis, lashed to the top of a toolbox.

"Mom said it was a pretty hairy flight and we landed on the last of the rotten ice in front of the house in North West River," Paddon related.

As he grew up the boy was bombarded daily with the sight of everything from small float planes to the latest fighter jets, lumbering transports and early jet passenger planes passing overhead. The year he was born, 1956, also saw the first air ambulance stationed in his hometown and he would grow up watching it coming and going on its 'mercy flights', wishing he could be at the controls.

"So, there was a lot of aircraft around, and I was always looking up," he recounted.

Paddon's dreams began to take shape at the age of 20 when, like thousands before him, he went to flying school in Moncton, New Brunswick. There, he earned his private and commercial licences. An instruc-



A Beech Queen Air was Hadden's first airliner.

tor rating followed when Aztec Aviation in St. John's (since absorbed by another company) offered to sponsor his instructor training if he would agree to then go to Goose Bay to run a satellite flying school for them. Thus did he find himself with a full time flying job just 20 miles from his hometown. With another pilot and two Cherokee trainers, Paddon instructed others and steadily built up his hours, adding multi-engine and IFR ratings along the way.

Labrador in those days was serviced by Labrador Airways (later Lab Air) flying Beavers, Otters, Twin Otters and a few other types and was an integral part of the northern life. Always on the lookout for young pilots with a decent number of hours, Paddon was approached with the offer of a job as first officer on a Labrador Airways Twin Otter. He accepted and began flying to the remote communities that dot Labrador's inland and coastal reaches. He was also checked out on the company's Beechcraft Queen Air and soon found himself in the left seat of that plane, operating a 'sched run' based out of Deer Lake on Newfoundland's west coast. His hours soon built up to around 2,000 until, in 1981, Haddon came to the notice of someone at Eastern Provincial Airways, then universally known as EPA. This airline, founded in 1949, grew steadily over the years, eventually embracing the jet age with a fleet of then-new Boeing 737-200s and becoming the pride of Newfoundland and Labrador.

"EPA loved to hire from Lab Air because we flew much less capable airplanes in the same area (as EPA)," Paddon pointed out.

With visions of jet pilot wings on his chest, Paddon started at EPA on January 21, 1981 as a co-pilot on the Hawker Siddeley 748, a twin turboprop soon phased out of service. In those days, he remembers, training of new hires was done on the actual aircraft, a simulator not being available.

"Myself and (pilot) Cy Dunbar used to fly around Halifax doing engine cuts and holds and everything and that thing was very, very primitive post-war technology and the weather would be crappy. I can remember doing training there, flying around on one engine, while Air Canada wouldn't even land."

Fortunately, after only about six months on props, Haddon was selected for training on the 737, going to Halifax for training on the company's simulator.

It was a pretty good place to work, he recalled, because it was small, everybody knew everybody, and people were willing to go the extra mile to help out.

"I must say, I enjoyed that. The captains were sort of a law unto themselves and it was quite good fun flying with them."

During his five years or so with EPA, Haddon spent some time on furlough and lost further time due to a strike that was long and, at times, bitter. But the



A Wag-Aero Sportsman is Hadden's retirement mount.

hours continued to build, the experience to mount and he developed a satisfying relationship with the 737.

EPA 737s were capable of Category II approaches in the 1980s, Paddon recalled, but were required by regulation to be flown with the autopilot engaged. EPA, with their vast experience of flying in often dirty maritime weather conditions, had obtained a rider allowing them to hand-fly Cat II approaches down to 100 feet.

"The turbulence was so bad here that the autopilots couldn't handle it. They were fairly primitive, so I think we were one of the very, very few, maybe the only outfit allowed to do hand-flown Cat IIs down to 100 feet."

By the mid 1980s Canada's aviation industry was changing, many smaller companies being bought up and integrated into national and even international operations. Such was the fate of EPA, and Paddon soon found himself flying for several companies that were in turn snapped up in deals that finally found him wearing an Air Canada uniform.

The national carrier, after swallowing several smaller concerns, found itself with a hand-me-down fleet of aging B-737s. Haddon quickly found a home in the left seat of the familiar cockpits. But the company soon began divesting itself of the aging airframes and made the decision to transition much of its fleet to the then-new and revolutionary Airbus A320 and its variants. Paddon bid on the new jets and underwent training on the fly-by-wire marvels, occasionally flying other types as required. For about three years he flew right seat on the Boeing 767 on international routes. Some of the flights were marathons, leading to stress and fatigue that soon dimmed the glamour of destinations like Beijing and Hawaii. The exception was London, England.

"I really liked London...used to go to live theatre every time I was there," Paddon recalled fondly.

With a layover of 30 to 36 hours there was plenty of time to explore the British capital and still get the necessary rest. But eventually the call of shorter flights with a more relaxed schedule drew him back to the left seat of the Airbus fleet. As time

went on, Paddon was comfortable with his career and his total hours finally grew to about 24,000. But, like many before him, a medical issue began to intrude. By this time airline pilots were permitted to fly to the age of 65, up from the 60 that had been the standard compulsory retirement age for decades. Assessing the time and treatment that would be necessary for his health and a growing interest in non-flying activities, Paddon decided to call it a career at 60.

Today, after a 40-year flying career, Haddon devotes much of his time to the entertainment industry. While not exactly eyeing the Broadway stage or the lights of Hollywood, he has become well known in his home province and beyond for self-penned recitations — rhyming stories about a wide variety of topics, including his flying career. A Wag-Aero Sportsman on floats that he "putters around in" keeps his flying skills sharp. Covid-19 permitting, he also spends summers on a Canadian cruise ship that takes the adventure-minded to Greenland and the Torngat Mountains in his native Labrador, taking people out on guided tours in Zodiacs and regaling them with stories and recitations.

"It all worked out very well. When I started, all I really wanted to do was fly the air ambulance out of North West River but, you know, your career sort of has a mind of its own, I think. It's all a bit of a fluke where it ends up. I always kind of look at my flying career as pretty mundane, but I really loved it. And I didn't hurt anybody. That's the main thing." 🛩️

The Canadair Argus

"THE MOST ADVANCED ANTI-SUBMARINE AIRCRAFT IN THE WORLD"



The first time I heard the deep, throaty engines of an Argus during its fly-by at a Shearwater International Air Show in the late 1950s, I was hooked. You could feel the power of its four Wright R-3350 Duplex-Cyclone 3,700-horsepower radial engines in the pit of your stomach.

The CP-107 Argus was a maritime patrol aircraft designed by Canadair as the CL-28. The company was based in the Saint-Laurent borough of Montreal, at the now closed and redeveloped Cartierville airport. As far back as 1949, Canadair reasoned that the RCAF was going to require a modern aircraft to replace the iconic Second World War bomber, the Avro Lancaster, 430 of which had been built in Canada. A few had been converted to serve as maritime patrol aircraft in Canada. Canadair designer Tom Harvie reasoned that by utilizing, in part, sections and engines of existing aircraft, time and money could be saved. The Canadian-built Canadair Argus was a unique hybrid which discarded



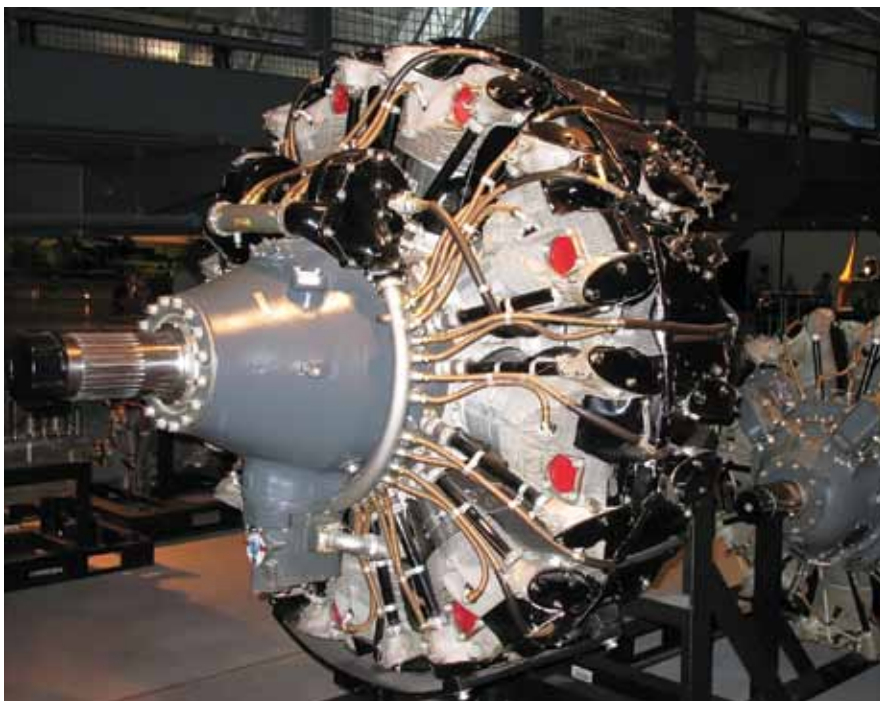
the Bristol Britannia fuselage and married the wings, tail surfaces and undercarriage of the British-designed Britannia transport to an unpressurized fuselage (including the bomb bay) designed and built by Canadair. Some details concerning cargo usage were built under licence from the Douglas DC-4 (USAF C-54 Skymaster). Canadair replaced the four Rolls-Royce turbojet engines with four of the aforementioned air-cooled Wright R-3350, 18-cylinder engines in two banks of nine. The radial engines were turbo-compounded (using an engine exhaust driven turbine blade to feed higher pressure air to the cylinders). Each engine swung a three-bladed Curtiss Electric

The Argus was Canada's Cold War first line of defence.

C634S-C554 metal variable-pitch 15-foot, 6-inch (4.72m) diameter propeller.

It was not, however, a simple matter of just snapping all these pieces together. It was eight years before licences were worked out with the different companies and Canadair sections, fitting modifications and innovations were designed and built, and all the bugs were worked out. The first production model of the Argus flew in 1957. The design went into production in 1958. Thirty-three were built for the RCAF by Canadair from 1957 to 1960. In its

PHOTOS COURTESY DON LEDGER



Wright Duplex Cyclone engines droned reliably for hours on end.



early years, the Argus was deemed the best Anti-Submarine Warfare (ASW) hunter-killer, maritime patrol aircraft of its time.

The Canadair-built fuselage, as mentioned, was not pressurized due to its bomb-bay doors but, in conjunction with its four 3,700-hp engines, it was able to carry a large weapons and ASW electronics payload. The Argus's empty weight was 81,000 lb (36,744 kg) with a gross weight of 148,000 lb (67,192 kg) giving a net payload of 67,000 lb (30,418 kg).

In its massive bomb bay, the CP-107 could carry torpedoes, or a combination of torpedoes, bombs, depth charges (not carried or ever operationally used), sonar

buoys, mines and LUU-2 flares etc. This payload capacity and the size of the torpedoes (for example up to 8.5 ft long) were the reasons why Canadair wanted a redesigned fuselage, a fuselage Canadair needed to carry out the missions that it envisioned in the future and with the weapons available during that period. It could carry external ordinance (usually rockets) which could be carried on the wings to a maximum of 3,800 lb (1,700 kg).

One of the Argus's chief abilities was to stay airborne for many hours. Its operational handbook values stated 26.5 hours of autonomy and a range of 5,089 miles, but in one case it was able to stay airborne

for 36 hours with about an hour remaining in its tanks when it landed. It wasn't a fast airplane by today's standards. Its cruise speed was 207 mph with a maximum speed of 288 mph. Its service ceiling was 24,200 ft (7,376 m). Its wingspan was 142 ft 3.5 in (43.38 m) with a fuselage length of 128 ft 3 in (39.09 m). The top of the Argus's vertical stabilizer was nearly 40 ft from the ground.

The Argus had a good safety record for its 25 years in service with only two serious events resulting in aircraft losses. The first occurred off the northern coast of Puerto Rico on March 23, 1965. The aircraft from 404 Squadron, Greenwood, Nova Scotia was involved in a nighttime exercise. It was low, turning back toward its target, the British submarine HMS Alcide, and was in a high bank angle when it dug a wing into a high sea swell and cartwheeled into the Atlantic. Argus 20727 was destroyed, and its 16 crew members perished.

The second Argus loss occurred on March 31, 1977. Argus 20737 from 415 Squadron in Summerside, Prince Edward Island was returning from a patrol mission with one engine shut down after it malfunctioned. No. 20737 was seconds from touchdown when it abruptly lost altitude and began yawing strongly to the left while dropping the left wing. With the nose high and its left wing low, the aircraft became airborne again, still veering left. The Argus pilot avoided hitting the control tower but skidded into a collision with a parked Lockheed Electra, tearing the Electra's wing open and severing the rear fuselage. It stopped shortly after trailing a fireball. One crewmember was killed while 15 escaped. Sadly, two more died later from their injuries.

The RCAF's official archives state, "Adapted from the Bristol Britannia, the Argus entered into service in 1957, giving the RCAF the most advanced anti-submarine aircraft in the world. It provided excellent service throughout a distinguished career. Although only 33 were built, there were still 31 in the Air Force inventory when it was retired in 1982 and replaced by the CP-140 Aurora." 🐦



A Fairchild FC-2

BORN IN THE USA, CF-ATG HAD A STORIED CANADIAN CAREER



Some historic bush planes departed factories, progressed through glory-wrapped careers and ended as piles of corroded tubing and mouldy fabric. Built in Farmington, New York by Fairchild Airplane Manufacturing Corporation on June 6, 1928, an FC-2 model registered CF-ATG attracted reams of paperwork and minimal maintenance almost as soon as reaching Canada.

Powered by a 220-hp Wright J-5 radial engine and first flown as NC6370, the aspiring bush plane weighed 2,175 lb empty and, on wheels, could take off at 3,600 lb with seating capacity of five. The wings each contained a fuel tank and another in the fuselage brought capacity to 85 U.S. gallons. First Canadian mention took place on June 7, 1932, when Washington's Department of Commerce provided an export certificate.

George C. Gerouard of a Detroit address passed CF-ATG to investor Harry McKernan in Edmonton for \$1,000. On June 27, a Department of Transport (DOT) inspector endorsed the wooden-wing freighter as "...airworthy in all respects" until office issues surfaced. Application fees or customs clearance never reached the bureaucrats and, without precious pa-

pers and authoritative stamps, wings and fuselage would subliminate into spider tenements. McKernan decided to exchange the Fairchild for "...good and valuable consideration consisting of shares..." to Edmonton's Northern Airways. The depression era meant the investment needed to bring in revenue quickly.

"The owners are extremely anxious to commence operations and it is asked that you wire registration letters and advise immediately it is in order to issue a temporary certificate," wrote district inspector H.C. Ingram to Ottawa headquarters.

Another administrative delay halted the enterprise. Alberta-based companies conducting commercial services required at least two British directors. Somehow, McKernan's wife found herself promoted to secretary-treasurer and Girouard's Detroit address mysteriously changed to an Edmonton one. Matters resolved by July 28, 1932; the air service received 60-day certification.

Still, CF-ATG ran into problems. The Fairchild P-4 seaplane floats of bolted wood frame with taped sealing retarded takeoff. Compared to contemporary Fokkers and Junkers, load carrying was not the aircraft's strong point, although no pilot nor passenger experienced injuries

At the Carcross water base, CF-ATG in 1942 seems to have survived Yukon cold but in summer, its pilots suffered through hordes of blackflies.

during its career. "At the present time, the machine has a very definite tendency to porpoise while running on the step and shows no inclination of flying itself off the water unless the stabilizer is full down and stick pulled very abruptly backwards," said McKernan on August 2, 1933. "The maximum speed obtained on the water seems a few miles under a comfortable takeoff speed."

McKernan contacted Ottawa's DOT headquarters for advice on wire lengths, angles of incidence and rear strut measurements, but the government body could do little more than pass requests to Fairchild representatives. Before long, CF-ATG and its nine-cylinder engine — the same type which powered Charles A. Lindbergh's Spirit of St. Louis across the Atlantic in 1927 — moved to Saskatoon's Mason & Campbell Aviation Company (M & C) on November 3, 1933. The wood floor cargo compartment absorbed the pungent aromas of fur bales, dog manure and eviscerated white fish throughout northern Saskatchewan and Manitoba. During a lightly loaded non-cargo sightseeing trip,

a landing at Stoney Lake near Prince Albert, surprised the two passengers.

On approach, the pilot closed the throttle at 1,500 feet. Upon touchdown on the "...rather squally water," one float contacted a wave and the aircraft immediately flipped. No one perished. However, the embarrassed pilot damaged three wing ribs during his prompt exit. Repairs included changed engine, new fabric and overhauled instruments.

After the incident, M & C Aviation appeared to drastically lower maintenance standards. On March 9, 1935, exasperated inspectors issued a grounding order at The Pas, Manitoba. An indignant telegram from M & C demanded, "Why did you sign CF-ATG not airworthy? We want to use it." In response, the Feds listed dry rot, sub-standard ski welding and propeller range dangerously out of track. They asked who authorized the airplane as fit for service.

Further scrutiny revealed false entries. After questioning the The Pas-based aircraft maintenance (AME), inspector T.M. Shields learned that employee protests within M & C generally met with threats of dismissal. In depression times, mechanics signed whatever they were told to avoid breadlines. To the regulation-conscious DOT, no excuse sufficed and the AME received a three-month licence suspension. More probing showed company owner Angus Campbell flying CF-ATG when "...it was found to be in deplorable condition." Management had the reputation for paying minimal wages while forcing staff to sign regardless of fitness.

Front windows had been ordered replaced but, to DOT's shock, one panel consisted of a cracked front pane. Incredibly, the opposite side had been replaced with plywood. Campbell's brazen policies warranted cancelling his air engineer certificate. Inspector A. T. Cowley concluded by pointing out that the company did not appear to cooperate with DOT for the "good of aviation."

"You had countenanced the use of plywood windows and had not given any instructions in regard to the general appearance of the aircraft," he added. "An aircraft of poor appearance creates a most unfavourable impression upon passengers."



M & C Aviation cleaned up with a renewed airworthiness certificate on May 4, 1940, and in September, dispensed with the 'Convertible Monoplane' to business team J. W. Clarke and W.D. Savage for \$2,750 in Fort St. John, British Columbia. They transferred CF-ATG to two partners with a grandiose scheme of freighting in the Telegraph Creek, B.C. Military needs had drawn almost all experienced airmen into the RCAF. Someone had to fly the airplane.

"I am contemplating on opening a trading post at Ross Lake in the Yukon, about 200 miles north of the Liard Post and figure on taking in about eight or 10 tons of freight by plane from Liard Post," wrote private pilot E. P. Callison. "As there is no other plane available, would it be possible to obtain permission to do my personal flying from Liard Post to my post at Ross Lake?"

District inspector Carter Guest considered the intended operational area beyond the skills of low-time private pilots. Callison gained experience elsewhere and became CF-ATG's part owner. Businessman George Simmons had already established Northern Airways in Carcross, 46 miles south of Whitehorse in the Yukon (no relation to the Edmonton company). When the Alaska Highway and Canol Road projects commenced, he desperately needed pilots. Callison brought CF-ATG to the job.

In mid-1942, Northern Airways considered exchanging CF-ATG's engine for a more powerful unit, but contract pressures forced the project on hold. Callison continued with Northern Airways and requested further certificates of airworthiness. While waiting, the DOT granted

Pilot Pat Callison delivered CF-ATG to Vancouver for overhaul in 1940. Although float struts appear flimsy, no records showed damage from hard landings.

temporary extensions when the mailed material failed to arrive.

"I notice by the different stamps on the letter that it had done considerable travelling," Callison wryly remarked when the envelopes finally came.

Logbooks showed CF-ATG required overhaul after 5,065 hours. Unable or unwilling to take on the task, grounding orders arrived on April 27, 1943. Callison wrote, "It wasn't much of an airplane, could only hold about 600 pounds." The hard-worked freighter took up residence in a brush pile where spruce, tamarack and balsam trees shrouded the disconsolate airframe from Yukon cold for years. An airplane-crazy teenager in the 1960s probed the barebones carcass at Carcross.

"I tried to talk my Dad into retrieval for restoration to flying condition, but he wasn't interested, and I couldn't go it alone," recalled aviation historian Robert Cameron, author of *Yukon Wings*. "It had the spars on the left wing still hanging on the struts, and the complete but unairworthy right wing, on a wall in the hangar."

Later, two enthusiastic Air Canada pilots trailered CF-ATG south for rebuild but the aircraft became the property of Winnipeg's Royal Aviation Museum. Another Air Canada pilot, Gerry Norberg, confirmed seeing the remains in St. Andrews, north of the city.

When finished for display by artist volunteers at the 'Royal', no corrosion or cracks will appear on CF-ATG again. ✎



THE CBY-3 LOADMASTER

A PRIME EXAMPLE OF CANADIAN
AERONAUTICAL INNOVATION

TEXT BY ED DAS

PHOTOS COURTESY NEW ENGLAND AVIATION MUSEUM



Most Canadians are familiar with the story of the Avro Arrow, but few have likely heard of an aircraft also built in Canada which promised amazing technological innovation and ended almost as sadly as its more well-known counterpart. The airplane was called the CBY-3 Loadmaster.

Vincent Burnelli was a talented airplane designer, widely recognized as one of the founders of the lifting-fuselage concept. In the 1930s Burnelli had hit on the idea of using the fuselage as a part of the aircraft's wing to provide lift and built several aircraft employing this idea. Unfortunately, through a series of bad-luck circumstances, the aircraft all met untimely demises and, despite numerous patents and favourable reviews from influential people within the aircraft industry (Clyde Pangborn, a famous test pilot of the day, called the CBY-3 Loadmaster the most efficient transport ever built), Burnelli was unable to secure significant commercial interest in his aircraft. ►



In 1944, Burnelli was working for Canadian Car and Foundry where he was employed as a designer at the Montreal plant. There, he designed a new iteration of his previous flying body design, this one called the CBY-3 Loadmaster. It was by all accounts a unique design and was shown to be an equally capable aircraft with many desirable features. The twin-engine plane's box-like construction blended the passenger compartment into the lifting surface which allowed for much slower landing speeds, arguably making landings much safer than conventional aircraft of the day, with an ability to land in only 700 to 800 feet. In fact, a crash of an earlier version in 1935, saw the entire aircrew walk away from what would have been a fatal disaster in almost any other aircraft of the time.

Because of the blended wing design, much of the aircraft's engine systems and flight controls, as well as its landing gear, were readily accessible while in flight—another safety feature. Pilots who flew the prototype were impressed with the aircraft's performance.

Not unlike the Avro Arrow, many theories exist as to why Can Car was unable to successfully parlay this prototype aircraft into a production model; it was, after all, seemingly ideally suited to Canadian operations with its ability to carry a significant payload, operate out of short fields at slow speeds and easily convert from cargo to passenger layout, all while offering significant safety advantages. Perhaps it was a reluctance of major aircraft companies to adopt Burnelli's ideas that only a single CBY-3 flew from the Montreal

The Loadmaster was flown all over North America to try to drum up orders but none were forthcoming.

factory. (He had heavily patented many of them and refused to join collaborative organizations that might have provided extra credence to his ideas.) Certainly, a glut of DC-3s returning to North America after the war may also have contributed to the lack of commercial interest, even though the CBY-3 could carry a ton more cargo than the Douglas transport airplane.

Despite the complete inability of Can Car to secure contracts for their airplane, the sole prototype would go on to prove itself, if not in driving business, at least in demonstrating it's more than capable design, flying all over Canada, the U.S. and South America before retiring to its final resting place in Baltimore in the early 1960s. It was later brought to the New England Aviation Museum (NEAM) in 1973.

In 2013, a team of volunteers at the NEAM pegged the long-forgotten aircraft, by then quietly disintegrating on a quiet patch of grass on a backlot of the museum for some 40 years, as a worthy candidate for restoration. As a sole remaining prototype, the task was immense to obtain missing components, and even the simplest of chores, such as figuring out the original paint scheme proved challenging since most photographs of the aircraft were black and white. As there was only one aircraft, spare parts from identical aircraft were not an option as is often the case with many vintage restorations.

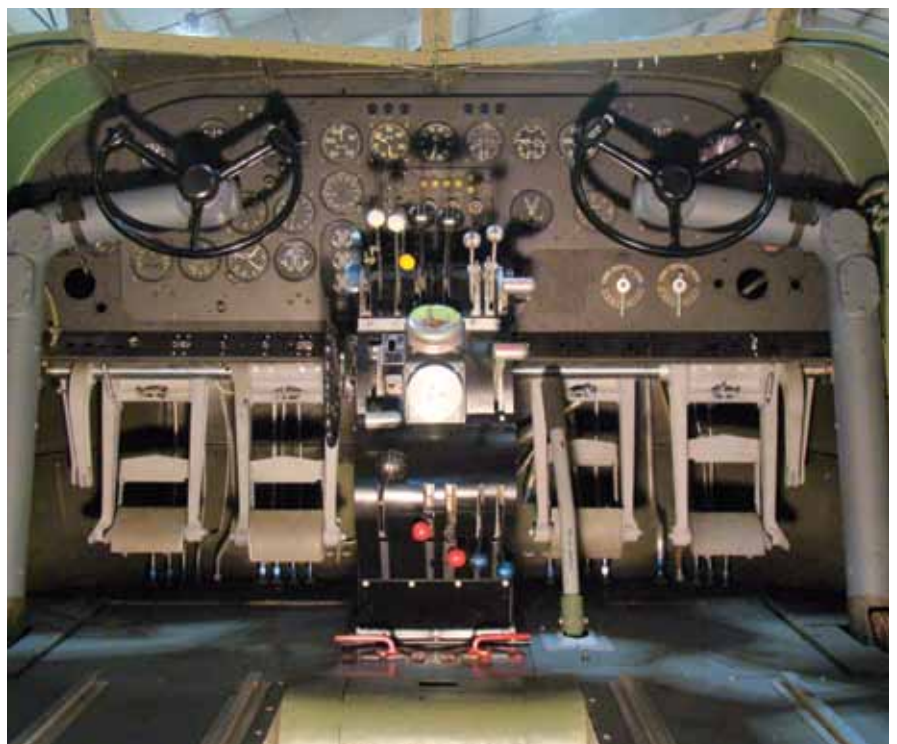


The New England Aviation Museum has spent thousands of hours restoring a little-known Canadian innovation.

Coincidentally, the tires employed on the original aircraft were the exact size as those employed on the Canadair CL-215 and, after a few well-placed phone calls to the Ministry of Natural Resources in Sault Ste Marie and another to Canadian trucking company Manitoulin Transport, a set of used tires suitable for museum display were obtained and delivered at no cost to the team as part of the Canadian contribution to this amazing aircraft's restoration.

Seven years later, the project is nearing completion by the talented staff at NEAM. In 2020, 75 years after its original debut, the Loadmaster rolled out of its hangar, looking as it did so many years earlier. It will be a centrepiece attraction of the static display at the NEAM, and a certain draw for Canadian aviation enthusiasts.

It is interesting to note that, although the CBY-3 Loadmaster did not live up to its potential, years later the cutting-edge ideas of Vincent Burnelli's designs and proof-of-concept aircraft, built in Canada, have finally been resurrected by many of the world's largest aircraft manufacturers, who are now employing blended fuselages as lifting bodies for their next generation of commercial carriers. The designs bear a striking resemblance to the aircraft Burnelli drew up ninety years earlier. ✈️





Seaplane Splashes

THE WELCOMING FOLKS AT TROUT LAKE

PHOTOS AND TEXT BY ROBERT S. GRANT

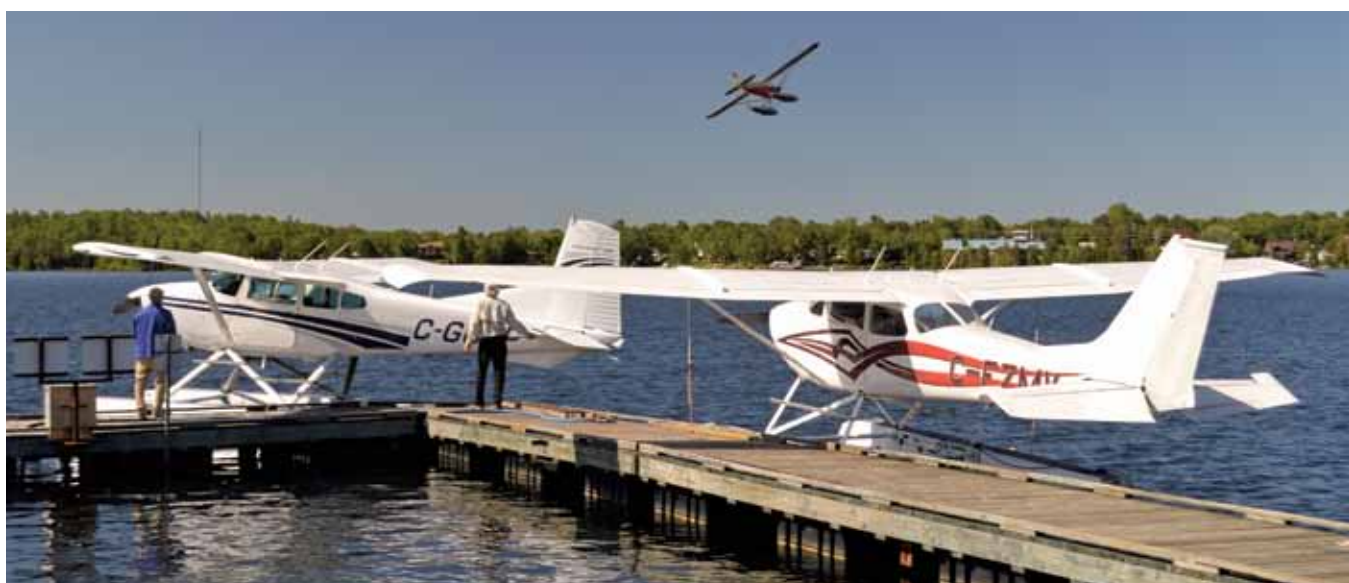
ADDITIONAL PHOTOS COURTESY TROUT LAKE AIR BASE



The Cessna 182's three-blade propeller whirled to a stop and, seconds later, 'dock rats' helped pilot Ronald Miller rope the aircraft's Aerocet 3500 floats to a pine plank dock. A ten-year-old girl and nine-year-old boy had followed Miller out the right-side door of C-GMUT. Both enjoyed the airplane ride and the splashing white water rippling away from Trout Lake Air Base had turned their first experience aloft into an adventure.

The introduction to the delights of what poet John Gillespie McGee, Jr. extolled as "footless halls" took place within the boundaries of the prosperous industrial city of North Bay, 181 miles north of Toronto. Several solidly anchored docks and a nearby orange-roofed hangar erected in 1987 marked an informal gathering place for a local congregation of aviation enthusiasts. Most hold private licences and several own float or ski aircraft but no commercial operators blast away into nearby hardwood bush country.

Commercial air services and flight training schools have stationed at the sheltered spot for decades. The last revenue-earning organization known as Air North Bay hauled its final 'turkey', or tourist, in 2003. Canadian aviation icons such as Austin Airways' Rusty Blakey often dropped in for fuel with a Noorduyt Norseman. At the same shoreline, North Bay-based Stanley Nichols freighted cabins full of prospectors and firefighting crews with an Orillia Air Services Stinson SR-10. Perhaps the lake's greatest claim to fame went as far back as 1941 when California's Warner Brothers selected the site as the milieu for the film *Captains of the Clouds*, with stars like James Cagney, ▶



“Without commercial-oriented companies depending on the site for charter work, the question of keeping the...base functional has often been raised.”

Brenda Marshall and Dennis Morgan. Producers of the modern television crime drama *Cardinal* also discovered scenic Trout Lake and, occasionally, North Bay floatplanes have been called upon to fill static roles.

“Float and ski traffic’s diminished greatly due in part to the 10,000-foot runway at Jack Garland Airport just over the hill,” said Miller, who learned to fly in a Piper PA-28 Cherokee in 1971. “Now we look forward to Oshkosh-bound airplanes or occasional east-west traffic crossing Canada.”

Without commercial-oriented companies depending on the site for charter work, the question of keeping the Trout Lake Air Base functional has often been raised. Taxes imposed by the city and provincial government dockage fees, combined with maintenance, hydro and spill and insurance coverage brings costs to as much as \$20,000 annually. Fortunately for North Bay’s seaplane ‘nuts’, former airplane owner and current enthusiast Frederick Culin stepped forward and has been providing support since 1997.

Owner/founder of Arnstein Equipment Rentals, Inc., Culin had developed a successful business by servicing the company’s products in roadless bush country. To reach clients leasing or purchasing heavy construction, forestry and mining machinery, he chartered airplanes from operators such as Orillia Air Services. Frequently, he found himself standing by



The comings and goings on the lake are a perfect picnic backdrop.

for transportation to customers or an expensive chartered aircraft waited unused at bug-ravaged wilderness work camps. Besides inconvenience, costs escalated by the waiting hour. For practical reasons, Culin decided investing in flight training would be a wise move.

“In the late 1960s, I got a private pilot licence in Aeronca 7AC CF-LWC like just about anybody else in the North Bay area who learned to fly in those times,” Culin recalled. “Later, I owned a series of airplanes up to a Cessna 206 in 1979 and could come and go whenever I wanted. When the water base came on the market, I decided to buy the place.”

During the student pilot process, Culin became passionate about aviation. Now 92, he no longer flies but retains serious interest in the air base’s well-being. Sadly, no financial assistance or tax breaks have been offered by federal or provincial sources. Luckily, the same enthusiasts who helped Miller park his Cessna 182 contribute to maintenance and general upkeep. Each spring, the group draws up a complex list of tasks and swings into a ‘go to it’ mode. In April 2020, for example, work taken on included everything from repaired fuel facilities and preparation of safety manuals to toilet serviceability in a small lounge and office building adjacent to the water. Safety-conscious, they devised a spill response plan and purchased a five-gallon spill kit.

Besides the burden of managing complex industrial maintenance and sales enterprises, Culin discovered the camaraderie of involvement with a like-minded

collection of pilots and families in COPA Flight 23. Youth in Aviation became a theme when several North Bay pilots adapted the EAA’s Young Eagles program. Fellow participants have contributed their airplanes and costs to take children for rides at organized rallies since 1994. The experience was not cheap for Culin—his 300-hp Cessna 206 consumed 16 gallons per hour of aviation fuel.

“Nearly a hundred North Bay and area pilots have flown over 3,800 youngsters as part of what’s now called COPA for Kids,” said Carol Cooke, whose husband Ron carried dozens in the family-owned Piper J-3 on Edo 1320 floats registered as C-FNFK. “Fred [Culin] became involved in 1997 and, in 15 years, he flew 238 Cub Scouts, Girl Guides, Pioneers and many others on floats, skis and wheels. We also carried Grade 5 kids from several schools as part of a science component. Teacher Ken Campbell started bringing classes out in 1995 and some former students have come back with their own families.”

Despite current economic downturns and dramatic decline in Canada’s aviation scene, Trout Lake Air Base rarely remains calm. During the pioneer bush flying era, visitors settling their seaplane floats onto Trout Lake expected the regular roar of radial engine classics like the Noorduyn Norseman. These graceful creations have gone now but the mellow tones of privately owned de Havilland DHC-2 Beavers mingle with low horse- ▶

Opposite page: For more than 80 years, Trout Lake has been a magnet for seaplane operators.



“When asked why the Trout Lake Air Base volunteers donate time and airplanes, most stumble out a few, “I just like doing this.”

power Champion Citabrias and Piper J-3s, as well as a variety of Cessna types. One participant keeps Maule M-6-235 C-FHQI busy with personal fishing trips to adjacent lakes. Jim Chappell and his wife M.J. enjoy long hauls to Oshkosh in their meticulously hand-polished Cessna 172 Skyhawk C-FTTV. On a 1998 venture, they returned to Trout Lake Air Base with an EAA award for best metal float airplane.

On weekends, neighbouring residents know the air base is no algae-covered backwater with dock spiders snapping at sandalled feet. The romance of flight may still be experienced. Safety-oriented non-pilot volunteers marshal children, guard wing tips and manipulate fuel hoses. Everyone subscribes to a 4F philosophy: flying, fun, friends and food.

Instead of flour bags, drill rods or gasoline kegs destined for hinterland camps, passersby watch eager children strapping into the pristine airplane seats. Divided into age groups from eight to 13 and 14 to 17, every COPA for Kids recipient wears a life preserver and listens to safety briefings. Culin's Cessna 206 always flogged away with all seats occupied. At the end of flights marked by the slide of floats against the dock's protective tires, the youngest children receive flight certificates, and the older ones accept genuine pilot logbooks and an authorization to enroll in a no-cost ground school.



Equally exciting events take place when COPA Flight 23 organizes sea-plane proficiency exercises. Before propellers turn, members place rows of coloured markers in Trout Lake and pilots and judges review rules. Each aircraft carries out two landings and targets touchdown spots between a pair of spherical floating buoys. 'Driving' an aircraft onto the surface results in disqualification and poor landings do not count. One judge happens to wear his own wings; Jonathan the Seagull fearlessly struts among forests of human legs and expects handouts.

The pleasant whistle of idling piston engines on final approach—no COPA Flight 23 members own turbine-powered types yet—adds to the pleasant atmosphere. Noise complaints rarely hinder pilots or dock rats and, when flying slows, the sounds of sizzling steaks, clanks of spoons and creaks of lawn chairs drift across the water. To conclude events and social gatherings, air base supporters inhale the aromas of barbeque smoke and taste pressure-cooked beans prepared by chefs within the group.

Culin, who admitted he "...always had a heart for the seaplane base and didn't want to see it fade away," turned its management over to his non-flying son David. No revenue flows in. Itinerant pilots do not pay landing fees and can access fuel during open-water seasons. Unaware of the air base amenities, some amphibian pilots avoid lake landings

After a great day of flying, it's time to enjoy each other's company.

and turn final for the sterile, wire-fenced international airport nearby.

"It is my view that those new to the world of float flying, but use amphibians, should be encouraged to land at the water facilities," added lawyer James C. Simmons, who depends on his Cessna 185 to visit clients throughout Northern Ontario. "This seems to be a time when people should enjoy the freedom and excitement of float flying."

Few Canadians have opportunities to soak in the refreshing sight of an airplane taxiing across a northern lake to the welcoming docks of places like the Trout Lake Air Base. At over-secured airports, such as Toronto or Montreal, the curious peering at airliners usually find themselves abruptly ordered to leave the premises. On Trout Lake, thanks to the generosity of the civic-minded Culin family, a not-for-profit collection of aviation adherents welcomes everyone, be they wide-eyed children holding the hands of equally interested parents or veteran bush pilots ferrying seaplanes across the country.

When asked why the Trout Lake Air Base volunteers donate time and airplanes, most stumble out a few, "I just like doing this." Whatever is admitted or confessed, they encourage young people to look toward aviation. They will be needed when the COVID situation is resolved. ✈️

Opposite page: Visitors and based aircraft alike are out in force on a fair weather summer day.

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2020 PHOTO CONTEST WINNERS



GRAND PRIZE

We received some great entries to the first annual *Canadian Aviator*/Garmin photo contest and the editorial team found it to be a pleasurable experience reviewing the photos and choosing the winners. One entry stood out as being ideally suited to grace the cover of this issue of the magazine and be awarded the grand prize, a Garmin VIRB Action Camera.

The winning photo, of renown wing-walker Teresa Stokes atop Gene Soucy's Showcat (a modified Grumman Ag Cat), was taken by Curtis Penner during AirVenture 2018 at Oshkosh, Wisconsin.

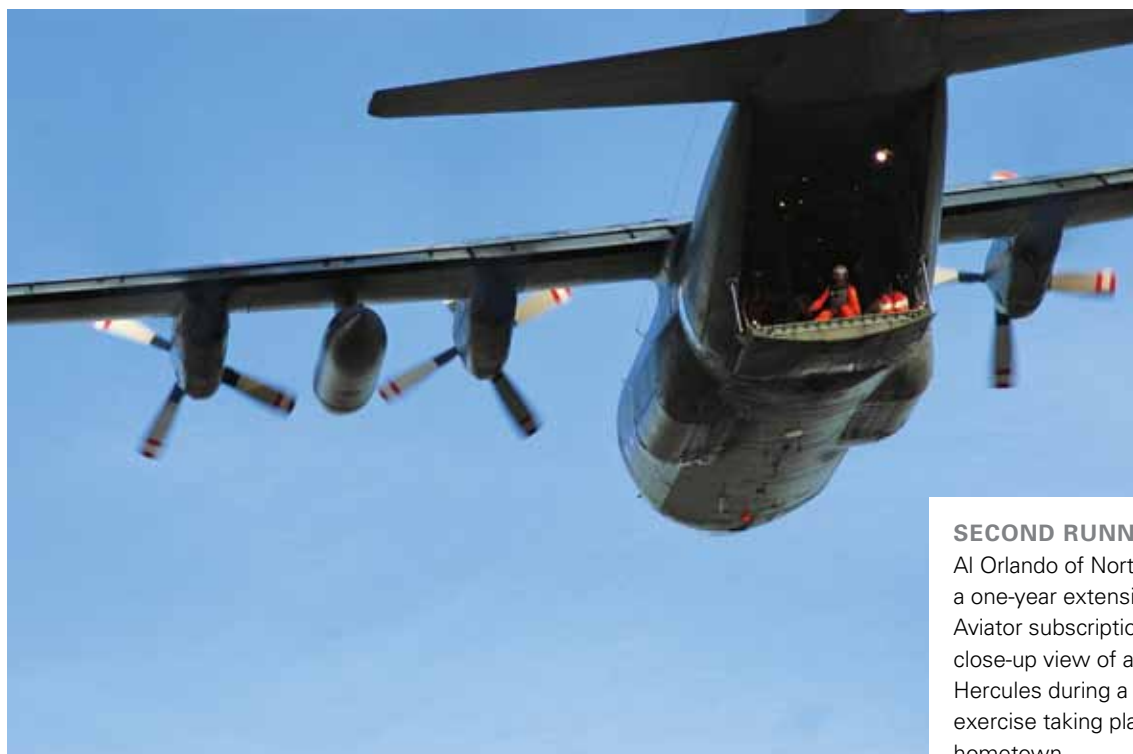
Penner, of Glenora, Manitoba, used a Nikon D4s with a Nikon 200-400 f/4G lens set to ISO 100, 1/400 and f7.1. We look forward to seeing a video taken with his new Garmin VIRB camera. ▶



FIRST RUNNER-UP

Our first runner-up prize of a two-year extension to their *Canadian Aviator* subscription is awarded to Ron Gerth for his awesome photo that caught a Cessna 208 Caravan on amphibious floats taking off from Chicken Lake in Northern Manitoba, with its propeller tracing a path through the humid air. Gerth, of Winnipeg, tells us the fishing was awesome too.

His Canon 50D camera with an 85 mm lens was set to ISO 125, 1/125 and F5.6.



SECOND RUNNER-UP

Al Orlando of North Bay, Ontario wins a one-year extension to his *Canadian Aviator* subscription for his excellent, close-up view of an RCAF CC-130H Hercules during a Search and Rescue exercise taking place not far from his hometown.



HONOURABLE MENTION:

Rudy Willms of Fort St. John, British Columbia sent us the photo of this de Havilland Beaver, the quintessential Canadian bush plane in the quintessentially Canadian setting — on a lake in Canada's back country.



THE PRIZE

Garmin's VIRB is an award-winning action camera, used by many pilots throughout the world. It records video in true 1080p HD. Recording at 120 fps allows for dramatic slow motion. The camera has a 16-megapixel CMOS sensor, and can be set for 1080p at 30 fps, 960p at 48 fps, 720p at 30/60 fps and 848x480 at 120 fps. The VIRB can be controlled remotely via its ANT+ wireless technology. Still photographs can easily be snapped even while videoing.

2021 PHOTO CONTEST

Stay tuned for the Jul-Aug issue of *Canadian Aviator* magazine, where we'll announce the grand prize for the 2021 Photo Contest.



BOOK SHELF

Have a story to publish? Contact Coast Dog Press at coastdog2@shaw.ca



Flying Canucks III

The 'flying Canucks' in this volume include some legends of aviation lore. Donald McDonald speaks

for the many Canadian WWII fighter pilots. The aerial achievements of Casey Baldwin and Don Muir serve as book-ends of a century of aviation and embody the unconquerable spirit of every era of flying.

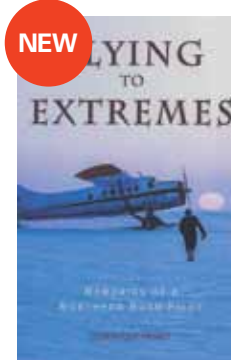
Author: Peter Pigott
Price: \$28.95 (includes shipping)



Wing walkers (large format)

From early spell-binding tales of daredevil aviators to the influential decisions made by hard-nosed businessmen, Wing-walkers is a meticulously researched history of the important role Canada's other airline, which became Canadian Airlines International, played in shaping our nation, transforming itself from a bush flying and mining operation into an international carrier.

Author: Peter Pigott
Price: \$40.95 (includes shipping)



Flying to Extremes

Recalling some of most memorable escapades ever conducted in the Arctic with bush planes, Flying to Extremes takes place in the late '60s and early

'70s from a base at Yellowknife. Readers familiar with the region and those who can only dream of visiting it will both find this title a nostalgic and captivating read.

Author: Dominique Prinnet
Price: \$31.95 (includes shipping)

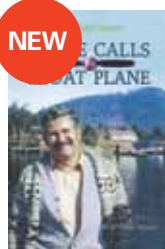


Lady on a Pedestal

Gordon Bartsch recounts how he used skill, ingenuity, and a good share of luck to create an airline serving the Big Dipper route in the Yu-

kon. The story's heroes are a converted DC-3 (CF-CPY) and a young woman who earned the right to fly the Big Dipper Route from the left seat.

Author: Gordon Bartsch
Price: \$49.95 (includes shipping)



House Calls by Float Plane

When Dr. Swan took the job at Pender Harbour's hospital in 1954, his first challenge was locating the place. Swan had intended to find a nice suburban practice but

became so fond of the rural coast he spent his whole career there. In this book, Swan looks back on a career serving unforgettable characters in an unforgettable place.

Author: Dr. Alan Swan
Price: \$28.95 (includes shipping)



Flight - Stories of Canadian Aviation (Vol 2)

In their own words, with the help of author Deanna Driver or other writers, Canadian pilots and aviation enthusiasts

share stories of first flights, aerial skills, adventures, joys, perils, assistance, humour, tragedy and success in this salute to the Canadian aviation industry and its people.

Author: Deanna Driver
Price: \$26.50 (includes shipping)



The Accidental Airline

Spilsbury bought an airplane in 1943 when wartime restrictions prevented the use of his boat to visit the upcoast camps and settlements where he repaired radios. From this innocent beginning grew Queen Charlotte Airlines and, when he sold the business to Pacific Western Airlines twelve years later, it was the third largest airline in Canada.

Author: Howard White and Jim Spilsbury
Price: \$37.50 (includes shipping)



National Treasure (hardcover)

National Treasure details the ins and outs, the backroom politics and the ground-breaking decisions that led to the creation of Trans Canada Airlines, through its early years and to its metamorphosis into Air Canada in the 1950s, including the notorious infighting between TCA and its rival, Canadian Pacific Airlines.

Author: Peter Pigott
Price: \$51.50 (includes shipping)



Best Seat in the House

Jim Griffith and Trans Canada Airlines were both born at about the same time and

grew together over the decades. Griffith experienced the history of Canada's national airline and this book tells the story of both.

Author: Jim Griffith
Price: \$34.95 (includes shipping)



NEW

The Canadian Bomber Command Squadrons (large format)

Through archival photos and excerpts from wartime documents, this book tells the story of the young Canadians who served with the Canadian Bomber Squadrons — their efforts during the early years and how they evolved as the war progressed, the technological changes and the tactical and strategic evolution that contributed to the ultimate victory.

Author: Dave Birrell
Price: \$45.95 (includes shipping)



NEW

The Airplane Ride (hardcover)

In *The Airplane Ride*, a young boy gets on a plane for the first time to go visit his grandparents, and we experience the newness of his journey along with him. *The Airplane Ride* captures the grandeur of the Canadian landscape. With its delightful combination of winning illustrations and simple, playful text, this is a sure-fire children's classic.

Author: Greta Guzek and Howard White
Price: \$23.50 (includes shipping)



NEW

Wings Over the Wilderness (large format)

Blake Smith tells the story of the secret WWII airway that arched across 8,000 miles of sub-Arctic wilderness and over Siberia to reach an ally in need. Primitive facilities, harsh climates and wild terrain were among the difficulties faced by American and Russian pilots in the transfer of nearly 8,000 warplanes from American factories to the Russian battlefield.

Author: Blake Smith
Price: \$59.95 (includes shipping)



NEW

Wings Across the Water

Over the decades, few planes landed in the Victoria area without coming to Elwood White's attention, and an astonishing number were recorded by his own camera. Written with an emphasis on accuracy and precision, *Wings Across the Water* is a must-have for aviation buffs everywhere.

Author: Elwood White and Peter Smith
Price: \$42.50 (includes shipping)

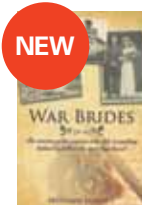


NEW

Bush Hawk Updated Edition

The famed FBA-2 known by bush pilots simply as the "Found" outlasted all of its competitors. Meet Bud Found, aptly cited for his undaunted belief in the aircraft born of his skill and imagination that would ultimately be named the Bush Hawk.

Author: S.R. (Rick) Found
Price: \$39.50 (includes shipping)



NEW

War Brides

For thousands of young British girls, the influx of Canadian soldiers conscripted to Britain during the Second World War meant throngs of handsome young men. The result was over 48,000 marriages to Canadian soldiers alone, and a mass emigration of British women to North America and around the world in the 1940s.

Author: Melynda Jarratt
Price: \$36.95 (includes shipping)



Vertical Horizons

Okanagan Helicopters achieved world renown from humble beginnings in British Columbia's interior by developing a mountain flying technique that is still a fundamental of helicopter flight training. Featuring first-hand accounts, extensive research and a multitude of photographs, *Vertical Horizons* is the first-ever history of this company.

Author: Doug. Grant
Price: \$55.95 (includes shipping)

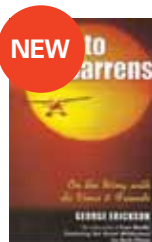


NEW

Otter Tales

The book tells some of Jack's more fun, crazy and not-so-fun tales from his flying days throughout Central and Northern Canada, including the high Arctic regions. It also touches on some of his time with Transport Canada where he became involved in space launch operations where he undertook to develop the safety requirements proponents had to meet prior to launching large, orbital and suborbital rockets in Canada.

Author: Jack Ireland
Price: \$39.95 (includes shipping)



NEW

Back to the Barrens

Aviation buffs, adventure travel readers, environmentalists, historians and anyone else who is concerned about our changing environment will love *Barrens*. Like its predecessor *True North*, *Barrens* is a celebration of the North — its beauty, history and inhabitants. It's a celebration lived by a knowledgeable author who probes the depths of the wilderness while having the time of his life.

Author: George Erickson
Price: \$24.95 (includes shipping)

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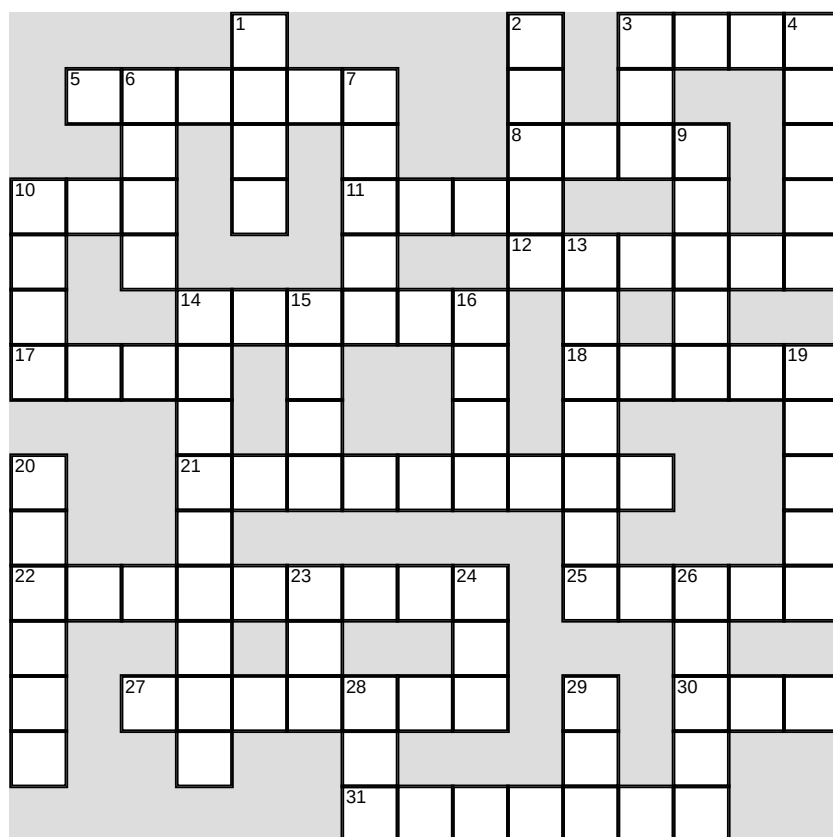
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Aviation Crossword Puzzle: *Mooney Model Names*

In this month's puzzle there are names of 10 aircraft models (clues marked with an asterisk [*]), made by Mooney. Other clues, but not all, are aviation related.



ACROSS

- 3 American air force, acronym.
5 Once a space station.
8 A steep, nose-down descent.
10 A measure of thickness.
11 A region or zone.
12 A Canadian Army reservist, for one.*
14 Shares this name with a Cessna.*
17 A wild cat.
18 Not expensive.
21 Tangled brush and bushes.*
22 A respected political leader.*
25 Aviation weather report.

27 Sustained applause.*

- 30 The green line in an airspeed indicator.
31 A grouping of aircraft instruments.

DOWN

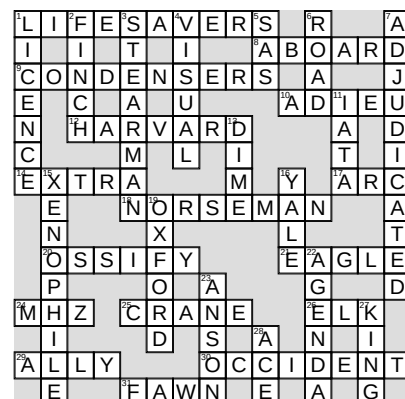
- 1 Found on some leading edges.
2 Detection system using radio waves.
3 Drone.
4 A pilot.
6 A thousand times.
7 Oft-heard shout at an opera.*
9 Can be bald.*

10 Main cargo in commercial aviation's nascent years.

- 13 Praise.*
14 A member of the C-Suite.*
15 A Caribbean island.
16 An Arabian ruler.
19 A piper model.
20 To ace a skill.*
23 Concorde was one.
24 A holy sister.
26 Path over the ground.
28 An approach.
29 A defunct Canadian airline.

REFRESH YOUR MEMORY

- Which of the following is not a traditional means by which to control ailerons?
 - Cables and pulleys.
 - Chains and tensioners.
 - Push rods and pull rods.
 - Torque tubes.
- Which of the following is true of tailwheel aircraft over nosewheel aircraft?
 - They have less parasite drag.
 - They have lower nose-over tendencies.
 - They are more maneuverable on the ground under high wind conditions.
 - They are more exposed to propeller damage, especially on rough or soft surfaces.
- What wing design feature reduces their tendency to stall suddenly as the stall angle is approached?
 - Wash-in and wash-out.
 - A high angle of incidence.
 - A Hershey Bar wing design.
 - An elliptical wing shape.
- What does the lowest limit of the yellow arc designate in an airspeed indicator?
 - The maximum flaps extended speed.
 - The upper limit for a power on stall.
 - The maximum structural cruising speed.
 - The maximum landing gear extension speed.
- The relative wind has an effect on which of the following?
 - The coefficient of drag.
 - Asymmetric thrust.
 - The angle of attack.
 - The angle of incidence.
- What does a steep pressure gradient indicate?
 - Strong winds.
 - Calm air.
 - Rising pressure.
 - Light winds.
- Wing fences are designed into wings for what primary purpose?
 - For preventing yaw tendencies in turns.
 - To strengthen the wing for high load factors.
 - For improving slow speed handling and stall characteristics.
 - To slow down ice accretion.
- What is a Mach number?
 - The ratio of the speed of a body to the speed of sound in the air surrounding the body.
 - The rate at which sound travels in air at various air temperatures.
 - The sum of the speed of a body and the speed of sound for the given atmospheric conditions.
 - A unit for measuring speeds in excess of 1,000 mph.

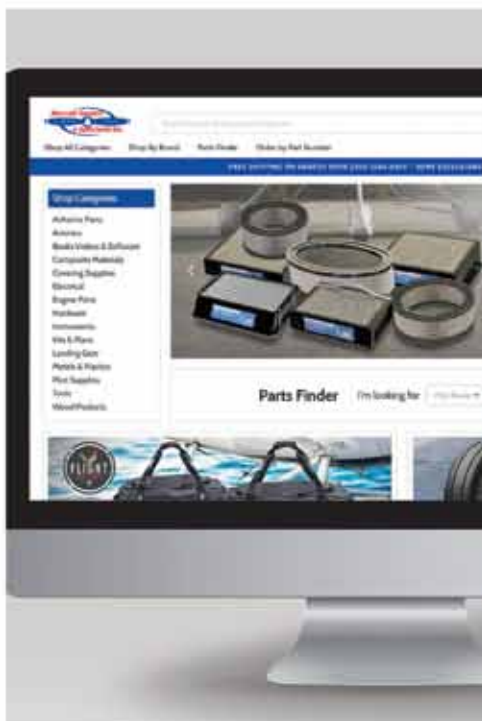


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